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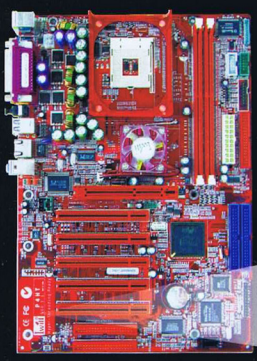

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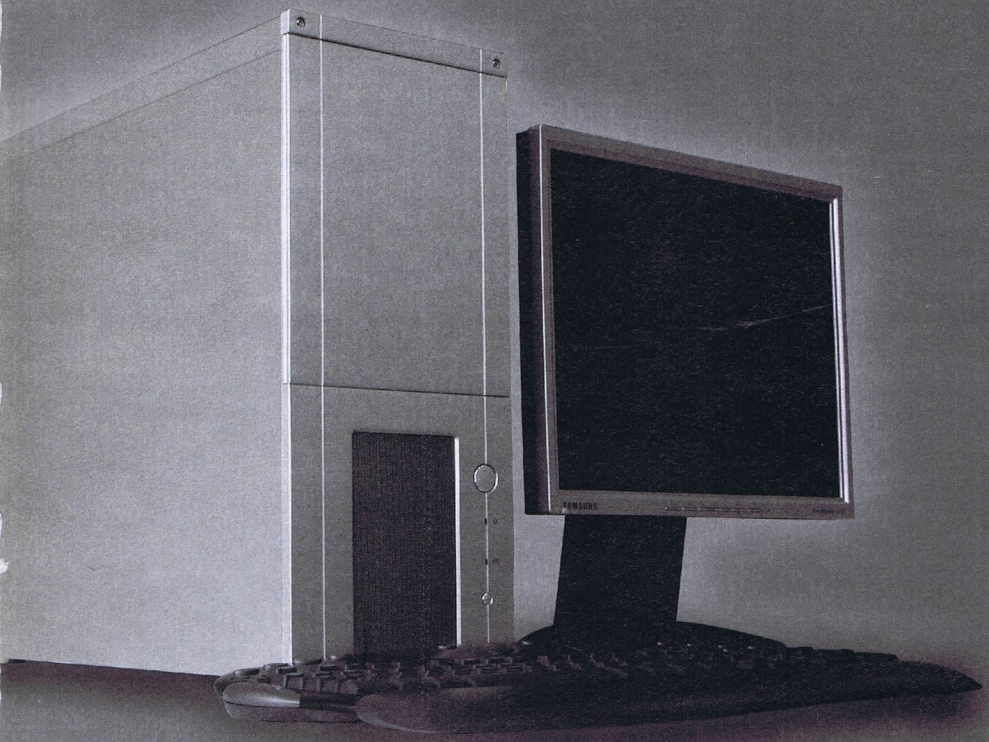

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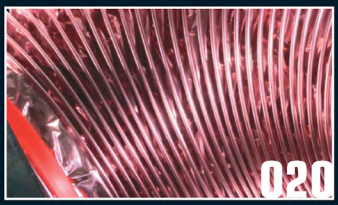

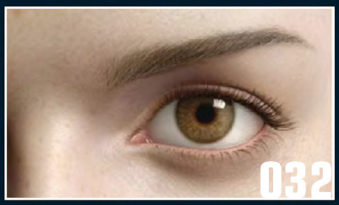

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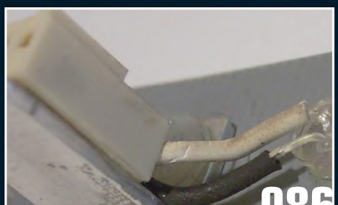

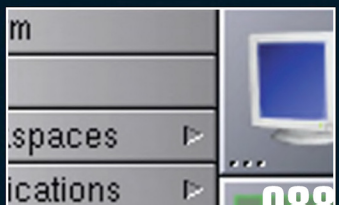

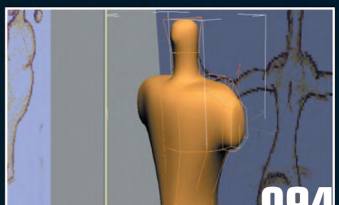

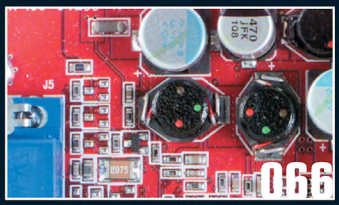

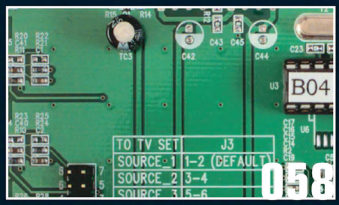

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The business of fun

Last month we were at the Australian Games Developers Conference in Melbourne with 600-odd others – not including the 400 LANfesters Counter-Striking each other all over the big room. The conference 600 comprised the Australian games industry's most powerful players, plus a swarm of students of the trade from the Academy of Interactive Entertainment, QUANTM, RMIT and the Computer Graphics College. Also present were a handful of interested and interesting politicians – mostly from the Queensland Government's Department of Innovation and Information Economy – even Senator Richard Alston would have been there, as promised, had he shown up, as promised. . .

Across three days all met and talked with each other, exchanging far more than mere business cards. Certainly, much was learned about games development – whether it be design, programming, art or any other of the traditional fields, but also of the nature of the business. In any other country this event would be an elite gathering of CEOs and marketing ponytails. That the AGDC was opened up to the young students makes it something special. Kudos to Micro Forte, an institutional Australian games developer, who opened the gates to its opening night party to one and all. For a young and prospective games development student, the opportunity to socialise with the leaders of this industry is priceless. Drilling into the minds of the old pros is a fast track an understanding of the industry they are getting into. Many years of mistakes can be avoided by a smart 10-minute conversation with someone who has 'been around'. That night I regularly spotted old grey seniors being grilled by young and eager students. And both parties loved it.

The reason the Australian games development industry gives up a good chunk of its time, and not-inconsiderable dollars, is for the industry's sake. We're forward thinking. The AGDC is not simply a gathering to look ahead at the trends of the next year or so – based largely on overseas experience, with an aim to maximise profits for that season or two. Instead it is a concerted effort to make the Australian scene competitive with the world's best.

And there's no reason it isn't achievable. The Government officials present certainly knew that, and were right behind the industry with more than just words. In Fortitude Valley, QLD, we have a 'Silicon Valley' of our own, where several development companies are thriving. Much like NSW has the film industry cornered – entirely due to Bob Carr's efforts – the Queenslanders are cornering games development. Government assistance plays a big part, and that's great. Among other ways of helping, a fibre-optic broadband connection is being set up in Fortitude Valley. Developers can upload gigs of data to their US-based publishers overnight, using the time difference to our advantage.

We now have momentum: an industry that can only grow and a pool of student talent ready to drive the next generation of Australian games. Maybe you have toyed with the idea of getting into the games business? If you want to take it to the next level and get serious, there has never been a better time.

Ben Mansill, Editor, *Atomic*

Team Atomic and special friends. L2R: Logan, Bennett, John, Kate, Stuart & Ben

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EDITORIAL
Editor: Ben Mansill bmansill@atomicmpc.com.au
Staff Writer: Bennett Ring bring@atomicmpc.com.au
Staff Writer: John Gillooly jgillooly@atomicmpc.com.au

DESIGN
Designer: Kate Marsden kmarsden@atomicmpc.com.au
Product Photography: Michael Frey

CONTRIBUTORS
Tim Dean, Stuart Denham, Dan Gardiner, Ronald Marc, Des McNicholas, Ashton Mills, Lachlan Newman, Simon Peppercorn, Steve Polak, Dan Rutter, John Simpson, Ivon Smith, Stuart Torkington, James Wang

PRODUCTION
Production Manager: Angela McKinnon amckinnon@atomicmpc.com.au
Sub-Editor: Stuart Ridley sridley@atomicmpc.com.au
Junior Sub-Editor: Logan Booker lbooker@atomicmpc.com.au
Traffic Coordinator: Jamie Dickson jdickson@atomicmpc.com.au
Subscriptions: Eileen Chong echong@atomicmpc.com.au

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Gordon & Gotch Australia (03) 9805 1650
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ADVERTISING + MARKETING
t + 61 2 8399 3346 f + 61 2 8399 3622
Strategic Accounts Head: Andy Jackson ajackson@atomicmpc.com.au
National Advertising Manager: Cathy Snell csnell@atomicmpc.com.au
Account Manager: Joveline Bascon jbascon@atomicmpc.com.au
Marketing Manager: Kate Imberti kimberti@atomicmpc.com.au

AJB PUBLISHING
t + 61 2 8399 3611 f + 61 2 8399 3622
Unit 2–5/44–70 Rosehill Street, Redfern NSW 2016 Australia
Managing Director: Adrian Jenkins ajenkins@atomicmpc.com.au
General Manager: Simon Corbett scorbett@atomicmpc.com.au

SUBSCRIPTION ENQUIRIES (INC. CHANGE OF ADDRESS)
Aust – t 02 9879 4915 e subscriptions@atomicmpc.com.au
NZ – t 09 625 3005 e rricketts@gordongotch.co.nz

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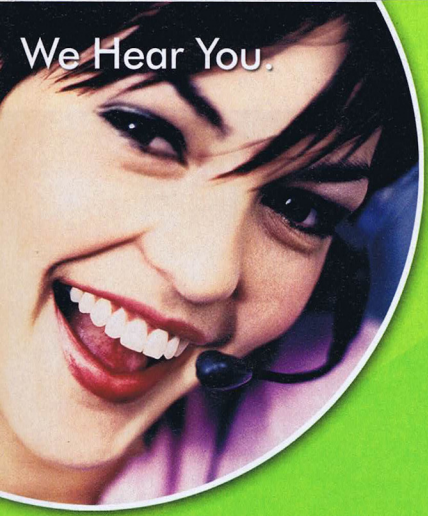

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Short Circuits

One is never enough. Apply this to a RADEON 9700 PRO chip, and you'd be hard pressed to find someone who'd think you're sane. Evans & Sutherlands specialises in creating realistic imaging systems for simulation systems, and it has decided to give the above idea a go. The company's new imaging system (video card), the simFUSION 6000, will make use of four 9700 PRO GPUs. One the one card. Now that's crazy talk. It's expected to have a phenomenal fillrate of 9.6-gigapixels, and the card will definitely chalk an organ-selling price. The card will of course feature the 9700 PRO's 256-bit memory bus, as well as 256MB of RAM. Benchmarks!

Ever had second thoughts about getting Cable? Start having second thoughts. In the past couple of months, a few ADSL service providers have started offering unlimited ADSL. Woot! And the deals aren't that bad either. At the moment, these providers include i-Green, Internode and TelPacific, however it won't be long before others consider going down the no limit road. Prices range from $80 a month for 256/64, to $349 a month for 1500/256. Unfortunately, these deals may go the way of the unlimited Cable if they're abused. You might want to leave it for a month or two to read other peoples' experiences.

A small correction for last month's GeForce FX X-Ray article: the table was unfortunately incorrect number wise. Most likely due to an attack of the Christmas printing gremlin, the table in question should have shown the GeForce FX sporting version 2.0+ pixel and vertex shaders with greatly increased pixel shader instruction and constant numbers over the standard DirectX 9 specification. Sorted.

Atomic conduction

Plutonium – is there anything it can't do? Well, other than cleaning your house or seving drinks, this element has it all. If you don't mind melting cells and hair loss that comes with radioactivity. . .

Plutonium has something else going for it now: conductivity. Or more accurately: superconductivity.

Researchers, including a Uni of Florida physicist, found that when Plutonium is cooled down to 18 Kelvin (-255.1°C – zero Kelvin is absolute zero, and that's bloody cold), it exhibits superconductive properties. What has these researchers enthralled is that Plutonium has properties that, by current standards, should prevent it from being a superconductive. While testing the element for magnetic properties, they found Plutonium exhibits anti-magnetic or 'diamagnetic' properties – a sure sign of superconductivity.

Superconductivity is an attribute given to materials that offer no resistance to the flow of electricity, and thus generate no heat. Wonderful – super fast chips right? True, but there are many other applications, and problems. Super speedy, electromagnetic trains are one potential development from the invention of a stable and safe superconductor. Costs to generate power would plummet, as the majority of energy would reach its location unhampered. Bye, bye power bills. Maybe not just yet. . .

In 1986 Plutonium would have been considered a high-temperature superconductor. But the recent discovery files in the faces of old theories, and opens the way to new research into superconductivity. Since then, some materials have been found to be superconductive at 35 Kelvin (-238.1°C).

At first, the team had trouble detecting and measuring temperatures with its sample, however, with the help of a researcher in the group, Dr. Gregory Stewart, it took accurate readings from the decaying element. Radioactivity, and the very nature of Plutonium, made it tricker to do much of anything.

John Sarrao, lead author of the scientific paper, commented: 'The heat that results from radioactive decay makes heat capacity measurements very difficult, in part because it's difficult to determine the actual temperature of the sample . . . Dr. Stewart made important contributions to the heat capacity measurements.'

Unfortunately, considering that Plutonium is rather dangerous in normal, everyday use, we won't be seeing the latest P4 packing a radioactive core. A healthy, unglowy life is preferable to skin that lumineses. . . as cool as that would be.

For the time being, the research will help to broaden our understanding of superconductivity. Which is nice.

PICTURE: Plutonium's superconductivity is great, but dealing with radiation given off by it will be the real challenge.

RIP DDR333

When the JEDEC finally ratified the PC2700 / DDR333 standard for DDR RAM mid-2002 there were strong indications the next major standard wouldn't be the DDR400 memory talked about by SiS, VIA and NVIDIA, but rather next-gen DDR-II technology. DDR400 has since stalled. Despite most Athlon motherboards sold recently supporting DDR400, the memory is rare. In fact, some of the stuff labelled PC3200 or DDR400 is DDR333 checked to run at higher clock speeds, leading to many complaints about poor DDR400 support in the VIA KT400 and NVIDIA nForce2 chipsets.

DDR400 looks set for resurrection: an unlikely supporter has emerged in Intel, rumoured to be planning an 800MHz FSB Pentium 4 early 2003. Intel recently launched its dual channel DDR workstations chipset, e7205, which used DDR266 in dual channel configuration to supply 533MHz of bandwidth matched to the P4's FSB.

Intel wants to bring dual channel DDR to the mainstream in 2003 and it needs two sticks of DDR400 to match the 800MHz FSB. It would be a major leap for Intel to go with an unratified DDR400 standard (look at how long it has taken to launch an AGP 3.0 chipset), so all eyes are back on the JEDEC which has indicated it is revaluating the technology. Check your DDR333!

Warp theory

It was a sad day for an OS that once had pretensions of being king when IBM recently announced the cessation of marketing for OS/2 Warp. This was the first multi-tasking operating system for the PC, and it bears a long legacy of development: it was first worked on in the 1980s by IBM and Microsoft while Microsoft also beavered away on a little piece of code known as Windows. As Microsoft's priority shifted to Windows, OS/2's development was left to IBM, where a brief burst of popularity with OS2 Warp 3 in 1994 heralded a new era of use. It never achieved a huge push into the consumer arena, but several businesses standardised on it, extending its life in the marketplace. It's six years since the current version, OS/2 Warp 4, was released and software development has moved far enough away from OS/2 to render it as dead as Elvis.

Perhaps prominent OS/2 journalist Ashton Mills can best sum it up: 'It's sad to see it officially go. Its amazing grassroots following kept it alive long after IBM let it slowly fall into obscurity years ago. But all good things come to an end – now is OS/2's time. Thanks for the memories.'

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Snot Grouts

In the beginning was the Detonator, then came Catalyst and now we have Hyperion. Unified driver sets are all the rage nowadays. They both simplify the driver update job for us users and allow for more rapid driver development by sharing a common code base. Hyperion is the new name for the ultra familiar drivers once known as 4in1s.
These drivers are essentially the version 4.45 4in1s, but the new name has come hand in hand with a promise of 15% performance gain over previous drivers, mainly due to some improvements made to the AGP driver. We are yet to have a chance to put the drivers through their paces in the Labs, but we will keep you posted on any boosts we see.

If you're looking to squeeze an extra 10% of performance under anisotropic and antialiased conditions out of your RADEON, you might want to check out ATI's latest version of its Catalyst drivers, the 2.5 set. We've tested these, and are overjoyed that they really do make a performance difference when using AA or AF. These drivers also incorporate the SmartGart feature, to help determine the best AGP speed and settings for your PC. ATI has also released drivers for Linux users – and it's about bloody time too!

Google has released a listing of the most popular search terms plugged into its search engine for the year 2002. Spiderman took out the number one spot, while The Sims was the most popular game-related term. We're very surprised to see that not once does the term hardcore, porn or Jenna Jameson show up in the lists, as you'd expect for a Web search engine. www.google.com/press/zeitgeist.html

Optical space Net

Mirrors are more fun than television. Especially if they're a part of a faster Internet experience. Okay, let's define faster – about a thousand times faster. Well, to be honest, said mirrors are more of a stepping stone towards said faster Internet.

And to solve our bandwidth problems will be optical chips – chips that would also replace the bulky telescopes we use today to see planets and stars. In fact, that's what they're being designed for.

Don't worry, we haven't gone off topic. Originally, the ESA (European Space Agency) began development on integrated optics to produce special chips to supersede the current technology we have in place to search the galaxy. However, it is entirely possible that we'll eventually see the technology in our PCs.

Project Scientist Malcom Fridlund is looking over proposals from companies interested in using the technology once it is developed. 'What I'm reading in those proposals is making me highly optimistic,' says Fridlund, 'I don't yet know whether mid-infrared integrated optics will have any commercial application, but until we develop them, we'll never know.'

Basically, the concept of integrated optics is a replacement for integrated electronics – we would use light instead of electrons, and as we all know, light is a significantly faster way of transferring information.

Like fibre optics, but on a microchip level.

The technology would benefit many areas of computing, including CPU and motherboard construction, but many believe it will see application in communications sooner than it will in consumer computer hardware.

Like fibre optics, but on a cable level.

As for the mirror system, known as Darwin, it would be used to examine suns and planets in space.

The system is very capable, apart from one niggling problem: if it's moved, it can break easily. Integrated optics has the dual benefits of having no moving parts, meaning no wear, and the much reduced need for maintenance; and the technology would result in a significantly smaller system.

Like fibre optics, but on a microscopic level.

So, in conclusion, what's good for science is good for everyone.

Like fibre optics.

Atomican

Nobody likes to download hundreds of gigs every time a new distro of their favourite Linux client gets released. It's even worse if you have to do this with a dialup connection. Luckily, thanks to the good work of trev99, Atomicans everywhere now have access to the *Atomic* Open Source Exchange, where you can find people in your city who already have your Linix flavour burnt and ready to share in the open source goodness. Distribute your way over to www.atomicmpc.com.au/forum.asp?cat=tm&top=62867.

Atomicans are arty folk. Just looking at the Downloads page, you'll see many of the fantastic creations for your desktop enjoyment. One particular group of Atomicans has taken its arty talents that bit further and has started up a Web comic, and a darned good one at that.

'Hail to the Geek' (geekcomics.keenspace.com) is the work of LordBen, Harley, Sparks and Helios. It's top stuff, so go out and read it.

In unfortunate news, Team *Atomic* again suffered a defeat at the hands of the OCAU in the Battle@Matchrix II.

Despite putting up a valiant effort and finding victory in MOHAA, the defeats suffered at Counter-Strike and BF1942 were enough to tip the scales in favour of the OCAU team and allow it to retain the large cup of shininess. Keep an eye out for Battle III: The Atomicans Strike Back in the Community section of the forums.

IvanTheTerrible isn't afraid to ask the hard-hitting questions, in his ongoing '?' series, which is now up to v3.6 (www.atomicmpc.com.au/forum.asp?cat=ge&top=74075), and continues with its frivolities and ponderings. Surf on over and ponder the mysteries of the universe.

In channel-related news, Prae has updated the channel bot to a new and improved system. As such, it was necessary for the official channel stats (ultracore.net:8033/atomicmpc) to be reset. So you'll all need to get those Dolphin pulses working overtime to get your stats back to where they were.

And remember, with space, it seems to go on and on forever. . .

But then you get to the end and a gorilla starts throwing barrels at you!

WHAT'S HOT

- **RADEON 9700 – 150 bucks less**
- **DirectX 9 – A shade better**
- **NOLF 2 – Out Bonding Bond**
- **Summer – It's hot**
- ***Lord of the Rings* – Massive™ fight scenes**

WHAT'S NOT

- **RADEON 9700 PRO – performance at a price**
- **DirectX 8 – Rendered already**
- **Nightfire – Blandfire, more like**
- **Summer – Way too hot**
- ***Lord of the Flies* – Cannibal scenes**

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I'm on the drug...

Games are great. Sometimes, they're fun too. But addictive? Maybe. . . though not in a bad way, surely? Ashton Mills takes a puff of his psychiatrist's pipe.

It seems perfectly normal for you and I to spend our time not only playing games and exploring the Internet, but also building behemoth machines on which to play and explore. It's fun, it stimulates the mind, and for the most part it's also highly social both on and off line.

But there's a pervasive negative view of gaming in our society, and to a lesser degree the Net. It's a view that denigrates it as a waste of time and even, in fact, addictive to the point of being detrimental. Ultimately, such addictions can end up impacting an individual's work, personal relationships and health.

Of course there's no smoke without fire. Yes, indeed, some people have taken their gaming or Internet play to the extreme, neglecting responsibilities to themselves or others.

But it's not a commonly catastrophic event, and for those that use these mediums of entertainment as a crutch for life, as something they *need* to cope with the everyday grind, then games and the Internet are the least of their problems. Such distractions are often not the cause for an individual's behaviour, and are often only the trigger of a dormant, underlying problem that is already there.

It's interesting to note that the first game to really draw this out was EverQuest, which eventually became known as 'Evercrack' due to the addiction many of its players seemed to display. It was a brilliantly designed game that, of course, would have players coming back for more. And while most players could enjoy a session and then put it down, there were those who found it increasingly hard to leave, until they did, quite literally, become addicted. Sacrificing all for the ability to play the game, they put the 'dangers' of online gaming into the media spotlight. There is even a group known as EverQuest Widows consisting of people who feel they have lost their partners to EverQuest. It may sound absurd, but it's quite serious. The group exists to support people in dealing with partners that have an addiction to the game, not unlike similar groups that handle alcoholism or gambling addictions.

So it's not surprising that gaming can be seen in this light, and not merely as a form of entertainment.

But it's important to look at the possible causes of such an addiction, and just how common it is likely to be, to get a fairer view of the intricate world of gaming.

'But to gamers, even if the game is brilliant and absorbing, they still treat it as just another game to play.'

If nothing else EverQuest is a revealing look into the human psyche, and Nicholas Yee's psychological study *The Norrathian Scrolls* (www.nickyee.com/eqt/home.html) is a fascinating insight both into the nature of people who play MMORPGs, and their relationship to MMORPGs. It's the latter specifically that reflects people's attitudes to games.

Which brings me to a recent article in *Jive magazine* (www.jivemagazine.com) that saw the female author, Jewels, embarking on a project of trying to understand her gamer boyfriend by deliberately getting into games herself and seeing if she could understand why he played them at all. She expected to find the experience unfulfilling and to write a negative piece about gaming as a pastime.

Except, she enjoyed it. So much so that she became as 'addicted' as he (in this case to the world of Anarchy Online). And her conclusion? If it's fun and not to a person's detriment, there are far worse things to be addicted to.

Speaking of which, it's interesting to note the type of people who are likely to become addicted to games. . . and for the most part I don't think gamers could be classed as addicts. At least, not in the sense the mainstream media makes out.

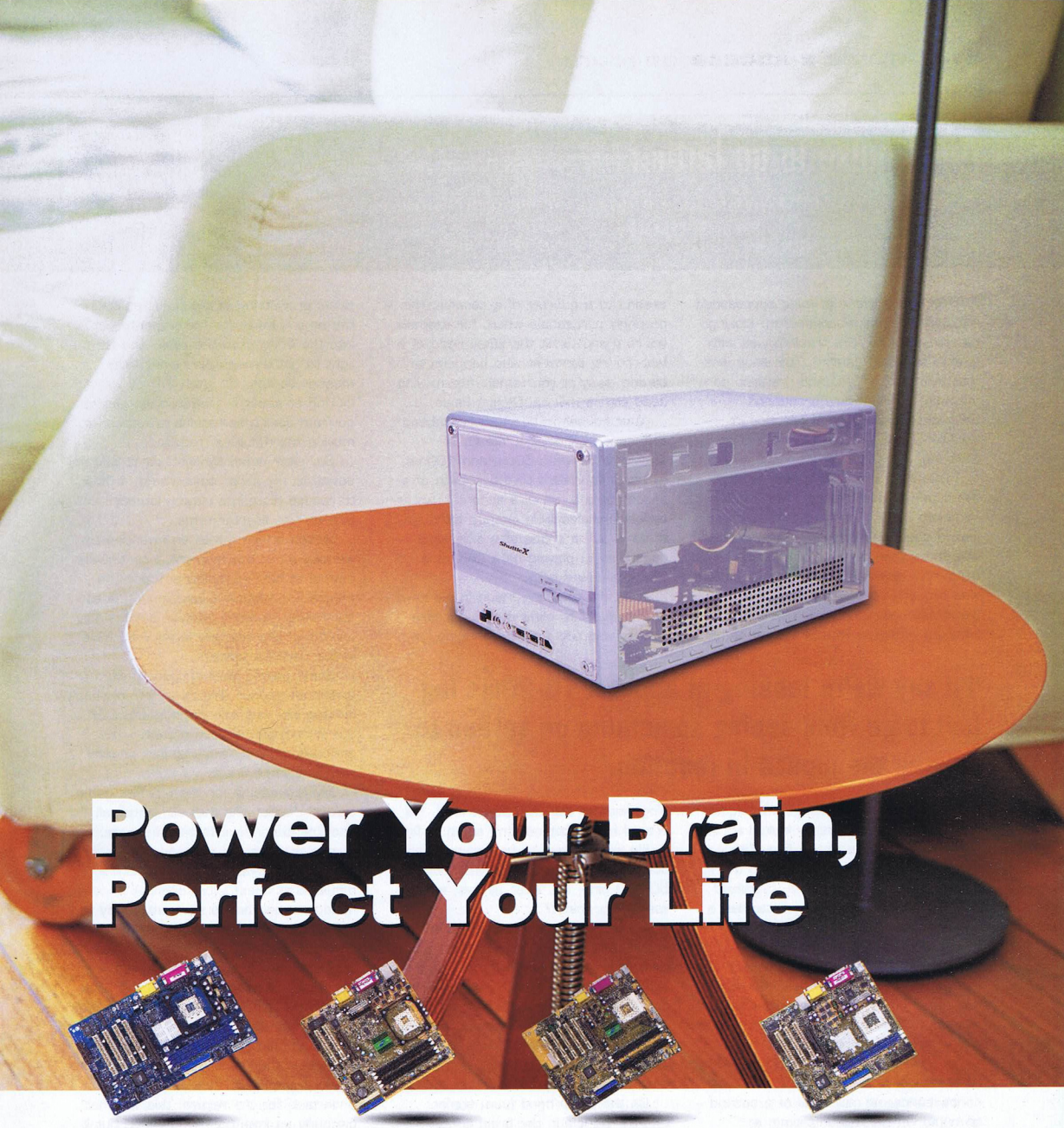
The MMORPG demographic that we commonly see is, in many ways, representative of all games. The type of addictive tendencies displayed by some players can be put down to the fact that such a gameplay style, in an active alternative reality as is often the case, is very likely going to be so much more attractive to players who don't normally play games, to people for whom such a game would be like discovering a whole new world.

But to gamers, even if the game is brilliant and absorbing, they still treat it as just another game to play. They are veterans of the field, they can 'ooh' and 'aah' at the latest hot game, sell their grandmas to get enough cash to buy it, and then take it home to play devotedly until the sun pops its dawning head over the horizon – but they'll still go to work on time, get their chores done, and spend time with their better halves. They won't become sloths in their ergonomically designed gaming chairs, because this isn't some all-encompassing escapism from reality – it's just another part of their reality.

Ironic. In the case of those who play games as a hobby, for whom it's no different than tinkering with a car or going to watch rugby, there's no issue with it becoming an unhealthy addiction. For those that are, instead, discovering the possibilities of gaming, and even the Internet, for the first time it's understandable that given the right circumstance and personality that they could become obsessed.

And ultimately, if the fine line between gaming hobby and gaming addiction is constantly blurred by the levels society deems acceptable, then what does it matter if you love your games to excess?

I agree with Jewels on this one, if you're going to have a drug to spend your cash and your time on, gaming is one of the more stimulating and enjoyable choices out there.



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An impulse to go farther

Suffering from lag? Can't reduce it down far enough? There is a reason why. Tim Dean looks into the matter, and ends up with whale song and a curry.

A while ago a friend of mine approached me with a technical conundrum looking for some advice. His problem was with latency in online gaming. The issue was that even with a CPU and graphics card upgrade, a brand new broadband connection and hours of practice in Counter-Strike, he was still suffering from lag.

I examined the case closely to find the cause of this latency – and drew a complete blank. The hardware spec looked good; the broadband connection was more than capable of handling the bandwidth required for gaming; Windows was properly configured; and all the game settings were streamlined and tweaked within an inch of their lives. It was only after this thorough investigation that I turned to my friend, looked up at him, and had an epiphany. See, I'm about six feet tall, and as I stood there, gazing skyward at my friend, I realised that he must have been no less than a full seven feet tall. Now that's where your latency is coming from chum.

See, computes run on electrical signals, which go bloody fast. Not quite the speed of light, but they're as darn near to that as far as human perception is concerned. The time it takes for a signal from the CPU to reach the RAM, for instance, is measured in nanoseconds, or millionths of a second – or in human perception terms: a buggerallth of a second. The main cause of perceptible latency in online gaming is with your Internet connection. The time it takes for a signal from your ISP to reach your modem (broadband or narrowband) is measured in milliseconds, or thousands of a second – or in human perception terms: 'BS headshot lag kill lamer'.

Your textbook modem connection will sport a 150ms to 250ms latency, which equates to around a seventh of a second to a quarter of a second. This is gratingly perceptible when, for example, you're trying to hit the small head of a fast-moving terrorist who happens to be blazing away at your small, fast-moving head with a .50 cal Desert Eagle.

Your household-strength broadband connection will pack a latency of anywhere between 50ms and 100ms, which is equivalent to a twentieth of a second to a tenth of a second. This is almost imperceptible latency, although there is still a shade of a difference compared to playing on a LAN at a 25ms or lower ping.

Now, my towering friend in his never-ending quest to eliminate all possible latency was not satisfied bringing his ping down to the 50-100ms level. He craved more, but couldn't seem to find it. He still seemed to be lagging behind other players who themselves sported a 50-100 ping. So, after all this, what was the problem?

'I'd say we're looking at about a 15-20ms lag just to go from seeing something on screen to moving the mouse in reaction.'

It's all in his nerves. See, nerve impulses run at anywhere between 20 metres a second and 120 metres a second, depending on the type. Muscle coordination impulses fairly fly along at 110 to 120 metres a second, as they need fast responses to prevent you from walking into telegraph poles – not that they've helped me from time to time.

On the other hand (pun) some thought signals in the brain lumber along at a stately 20 metres a second. And yes, we all feel like that from time to time.

My tall friend had hands that were roughly one metre from his motor cortex. With nerve impulses running at, say, 100 metres a second (just for round figures), it takes an impulse roughly a hundredth of a second to get from motor cortex to fingers. That's 10ms. Furthermore, you need to factor in the thinking time in the cortex, the visual processing in the visual cortex, the time it takes for the signal to get into the brain from the eyes, and for the light to get through his bloody filthy monitor screen. All in all, I'd say we're looking at about a 15-20ms lag just to go from seeing something on screen to moving the mouse in reaction.

So, after some thought, what was my advice to my gargantuan friend on how to reduce his game playing latency? Simple. Get shorter arms.

Which brings me to an invention I'm working on at the moment. I continually marvel at how incredibly amazing the mouse and keyboard combination is at controlling so many games. But I'm also mindful of the inherent latency we have in our nervous system.

Some people have suggested we attach electrodes directly to our brains so that we eliminate the bottleneck of the extra-brain nervous system – but seriously, people, that's all just garden variety science fiction.

My proposal is for the ultimate game control device: one that eliminates all possible extraneous factors from your gameplay, leaving a raw and rapid edge to your reactions. I'm talking about a mouse that doesn't just connect to your hand, or arm, but to your entire body. In a float tank. Yes, one of those hippie contraptions you lie in, floating in body-temperature water, in complete darkness, listening to whale song. All you need is to hook up some motion and vibration sensors, plug that into a PS/2 port, and cut a tiny opening for your monitor in the top.

Pure gaming.

In fact, for the record, this was not originally an invention for gaming, but it happens to be ideal for that too. From the start, it was meant to be the ultimate curry-eating platform. One completely devoid of any possible distractions that could draw your attention away from the pure, whole-body, whole-mind and whole-soul devotion to the consumption of curry.

Hey, combine the two – gaming and curry – and now you have something truly earth shattering.

So, there you have it.

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Filling up the laptop

Daniel Rutter wants what everyone who uses battery-powered devices wants: more power, for longer.

You know what's wrong with the world today? Batteries.

OK, OK, maybe batteries aren't the world's **biggest** problem. But they're a significant one.

Computing technology has improved out of sight in the last few decades, but battery technology hasn't advanced nearly as quickly.

For low power devices, that's not a big deal – modern batteries can deliver days of mobile phone standby time, and modern portable audio devices can run for a respectable number of hours from one or two AA cells.

But there are plenty of **high** power devices that could benefit considerably from a better energy source.

There's nothing wrong with the **concept** of the battery – an electrochemical reaction that produces a potential difference between two poles of a cell, multiple cells stacked together making up a battery – but the darn things just don't have enough energy density.

Energy density, which is commonly measured in watt-hours per kilogram (Wh/kg), tells you how much juice you can get out of a given power source. A one kilogram, 100Wh/kg battery will give you a hundred watt-hours; it could run a 100w bulb for an hour, assuming it didn't have trouble delivering its power that fast.

Lead acid batteries are cheap and last well, but they'll give you only about 35Wh/kg, shading up to 50Wh/kg for expensive versions. Nickel metal hydride batteries – the most common type for cheap portable devices, these days – manage about 70Wh/kg. Lithium Ion batteries are common enough these days too, and manage 120 or so. Lithium polymer's still pretty exotic and it manages 150-odd Wh/kg.

Alkaline batteries can manage about 140Wh/kg, but they're no good for high-drain applications, and you can't recharge them.

Petrol, for comparison, manages something in the order of **thirteen thousand** watt-hours per kilogram. Petrol engines are miserably inefficient, but even an implausibly good 90% efficient electric drive system in a car carrying around **five hundred kilograms** of Lithium polymer batteries will only give you three quarters of the motive energy that you'd get from a 50-litre petrol tank feeding a cruddy 20% efficient four-stroke engine.

One day we'll have batteries that pile up free electrons in quantum pockets in a trifistrium matrix, or something, and deliver the energy density of a plutonium bomb.

In the meantime, if we want to get away from burning fossil fuels in horribly inefficient mobile engines and powering our portable gadgets from low energy-density batteries, fuel cells look like a good idea.

Fuel cells electrochemically convert fuel into electricity, without bothering with the awkward combustion process that dooms regular engines to inefficiency.

The fuel that most currently workable fuel cells run on is hydrogen, which is a bit of a pain to store and transport. A device called a 'reformer' can be used to convert methanol and water (much easier to store) into carbon dioxide and hydrogen, but reformer-based fuel cells aren't very efficient, and small models for portable electronic devices are less efficient still.

'Direct methanol' fuel cells (DMFCs), on the other hand, run from un-reformed methanol. DMFCs seem most likely to end up in your laptop or mobile phone or super-loud boom box that can annoy a whole beach for a whole day without a break.

Eventually.

A DMFC with currently unremarkable 35% efficiency ought to give you 170-odd watt-hours from only 100ml of methanol – that's not incredible, compared with current laptop batteries, but it's good. And – the big plus – you get another 170 watt-hours every time you slap in another 100ml fuel cartridge.

The companies developing small DMFCs envisage methanol cartridges selling like batteries, except rather cheaper on a watt-hours-per-dollar basis.

If tweakers and skinflints use syringes to refill their cartridges and, regularly, poison the catalyst layer inside their fuel cells, I will **so** not be surprised.

All of the practical DMFCs so far require about a 3% solution of methanol in water to run.

Fortunately, this doesn't mean that 100ml of methanol has to be hiding in 3.3 litres of mainly-water 'fuel'.

These things **make** water in the process of running, so they just need a small water reserve to get started, recycle most of it, and emit a little bit of water vapour.

One major DMFC catch is that when you do the watt-hours-per-kilogram or watt-hours-per-cubic-centimetre comparison between methanol and the battery technology of your choice (in Wh/kg terms, 35% efficient methanol-to-electricity conversion beats Lithium polymer by a factor of about 14), you're not taking into account the size and weight of the fuel cell itself.

The fuel is light and small; the fuel cell is not. Pretty much all of the small DMFCs so far are more than double the size of the gadget they power, and they're often obvious prototypes, about as stylish as a breeze block.

Another major DMFC problem is that small DMFCs don't have anything **like** the current capacity needed to run things like laptops, yet. They have the energy, but they deliver it in a trickle, not a flood. High current models are, thus far, much too big to be practical.

But that'll change.

If you're really hardcore, of course, you're going to hang out for Mr Fusion, so you can run an Aluminium smelter on three banana peels a day.

But a pocket full of wood alcohol cartridges will, I think, beat the heck out of batteries, for the rest of us.

'If tweakers and skinflints use syringes to refill their cartridges and, regularly, poison the catalyst layer inside their fuel cells, I will so not be surprised.'

WAITLESS

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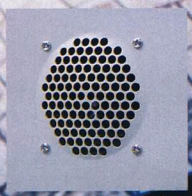

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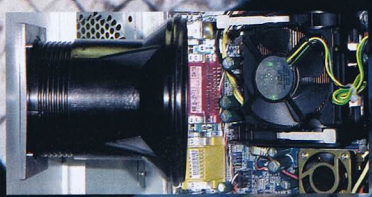

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Wid's Caged Tiger

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- Epox 8KHA+ Motherboard
- 256MB DDR PC2100
- 40GB Seagate HDD
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- BenQ 32x10x40 burner
- Two 60cm round silver braided ATA100 IDE cables
- Bay-bus fan controller
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The story

Like most *Atomic* readers I caught the HotBox bug. This is my third modded case; but I wanted this one to be a classic something that showed the many hours of work it takes to do a mod like this. I got the AOpen HX-08 400W PSU server tower because it has lots of room for expansion and great air flow. When I got the case I set about stripping her down. Then I marked up where I wanted the fans on the side of the case to go so that they were directly over the top of the CPU and motherboard and also the blowhole on the top case cover.

I gave everything three coats of colour and three coats of clear to bring out the gold shine. Then came the really fun bit: putting it all together – wiring up the fan bus, covering all the power cables and black heat shrinking all the LED and power button cables. A smear of Artic Silver 3 Thermal Paste on the CPU and she was ready to fire up.

10GHz's B\\ACK MAG//C

Technical details

- AMD Athlon XP 1600+
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- Hightech RADEON 8500 retail
- Acer 20x10x40 burner
- Samsung 52x CD-ROM
- Maxtor 40GB 7200rpm HDD
- Maxtor 850MB(mod) HDD
- Antec 550w TruePower PSU
- 4x16 LCD mod
- Homemade Rheobus
- Nine fans (in & out)
- Two purple neons
- Two Perspex windows

The story

Firstly, I would like to thank *Atomic* for being an inspiration to me – without it, I would've never completed this project. It began about three months ago, when I bought my second copy of *Atomic (issue 18)*. After dropping a list of ideas down, I then ordered this $200 server case from the good people of DIGICOR. First came the 120mm front intake, then the back, then the window was cut a few weeks after that. After a long search for chrome edging, I finally completed the windows. I've made some minor errors along the way, but luckily, they were all fixable. Two 80mm fans were mounted on the side and a 90mm on top of the case. Once the LCD mod was completed, my Dad and I worked on the Rheobus and that took about a week. Lastly, the hard disk mod was completed. Then all the other pieces fell into place – neon lights, fan filter etc. I would like to thank Shen for selling me his old comp for 50 bucks, even though I only ended up using the floppy. Also a big thanks to my Dad for helping me out, and his boss for lending me the digital camera.

WIN WITH COMPUCON

Send pics of your HotBox to hotbox@atomicmpc.com.au to enter!

Futile by Patrick

Technical details

- AMD 1.2@1.33GHz on a KT7A-RAID
- 512MB SDRAM
- ASUS GF2 MX 64MB w/ TV-out
- 14 hard drives totaling 1.04TB
- WD7200rpm 100GB HDD
- Seagate 7200rpm 80GB RAIDO
- Four Seagate 7200rpm 80GB HDD RAIDO
- Quantum 7200rpm 60GB
- Western Digital 5400rpm 60GB
- Dual AOpen ATX 300W power supplies units
- Five 120mm fans and two 92mm fans for cooling

The story

Desperately low on space, I decided to make a box that would be future-proof. A friend donated an ancient server case that I stripped back to the bare chassis and had powder-coated pitted gunmetal grey, creating an awesome looking durable finish. Most of the work was in creatng all the mountings for the HDDs, motherboard, fans and dual ATX power supplies. I then installed a sign-written window and three green cold cathodes, enhancing the 'Borgish' look. With fourteen HDDs installed and space for twenty, it's a hernia-inducing mission to get to LANs (~45kg). I bolted on heavy-duty handles and attached some multi-directional wheels with handbrakes to make it easier. The fans are noisy, but with 590 CFM keep the HDDs ice-cold. I just wanted to push the boundaries of IDE storage, and see a terabyte on one computer – though unfortunately I lose ~72GB to formatting :(. Resistance is Futile.

Shannon's TranziztoR

Technical details

- Pentium 4 1.3GHz
- 384MB PC800 RDRAM
- GeForce2 GTS Ultra 64MB TV-out 255/500MHz
- 60GB Maxtor 7200rpm
- 16x NEC DVD-drive
- LG CD-RW drive
- 400w Antec TruePower (d/fan)
- 10/100 LAN
- Sound Blaster Live! Digital 5.1
- Digital BA735 Boston Acoustics
- Zip 100MB internal
- Six case fans
- Modded P4 Tsunami case

The story

Firstly a friend Will and I constructed a three-switch on/off bay bus; after this the whole case modding scene had been blown out in the open and I then decided that the next thing for me to do was to paint the case. I stripped the case down to its bones, and thoroughly cleaned off all the dust (whoops!) and began. I painted it black with industrial style hazard stripes on it using a ruler and some trusty masking tape. I then decided that I would make a template for some fire, so I did this. I then purchased a window kit and a few bio fan grills and some red neon lights. I then installed the neons and had the window cut at Eclipse Enterprises in Hornsby as I didn't have any power tools. The neons and the switch for them were installed. The last thing I did was to mark up some blow-holes on the top of case, and using the power-drill and some tin snips I went around the holes and installed the blue LED fans and applied the bio fan grills and two satin chrome-finish handles.

Badong heat duct

SUPPLIER: AusPC Market www.auspcmarket.com.au
PHONE: AusPC Market (02) 9817 2899 PRICE: $45.10

The poor old robot from *Lost in Space* must be in total agony after having his arms ripped from his torso to create these heat ducts. Oh well, Mister Robot, at least it was for a good cause. As most case modders will already know, feeding your CPU cool fresh air directly from the exterior of the case via a duct can dramatically lower the overall temperature of the CPU (up to 15C or so in a best *case* scenario), which could be crucial when squeezing a few more MHz out of your CPU. It also fitted the stock Intel and AMD coolers we have perfectly. There are four different versions: a 60mm P4 cooler; 70mm P4 cooler; 60mm cooler; and an 80mm cooler, so you'll have a reasonably good chance of finding a duct to match your cooler. This gadget rocks, which is surprising for such a simple concept.

Litepad Elite V2.0

SUPPLIER: Flexi-Glow Lighting www.flexiglow.com
PHONE: Flexi-Glow Lighting (02) 9684 6796
PRICE: $39

Optical mice don't tend to work too well on clear surfaces. Until now that is. These ultra cool mice pads are made from a clear acrylic plastic, and as a result light up beautifully at night when used in conjunction with an optical mouse. The effect is as close to being in a Tron movie as you can get without having to get sucked inside your PC. They also happen to have one of the smoothest surfaces you'll find on a mouse pad. We tested this mousepad with a Logitech dual optical mouse, and it worked perfectly, and looked oh-so-cool late at night. You won't find a better feeling or cooler looking mousepad. So buy one now.

Sound sensitive module

SUPPLIER: PC Case Gear
www.pccasegear.com.au
PHONE: PC Case Gear (03) 9568 0932
PRICE: $9.50

When you're off your face at a club, watching the lights flash in time to the toons being spun by the DJ, it can often seem like a religious experience. We swear we've seen the gates to Heaven during several of these altered reality moments, and now you can get the same effect at home on your modded PC using this little black box.

Simply plug your neon/LED/cold cathode/Death Star laser into the black box, crank up your tunes and watch them flash away as if a expert lighting engineer is controlling the action. It's really that simple, but unfortunately the kit doesn't arrive with mind-altering substances to enhance the final effect. If you have multiple lighty bits, the use of a Molex power splitter will allow you to chain them together so that they all flash in synchronisation. Sure it might get incredibly annoying after a while for those who don't have an Xmas tree fetish, but at only ten big ones it's worth a try. At the very least, you might be visited by God.

USB Snake light

SUPPLIER: PC Case Gear
www.pccasegear.com.au
PHONE: PC Case Gear (03) 9568 0932
PRICE: $17

Unless you're Riddick from *Pitch Black*, seeing in a darkened room can be a little tricky. Instead of implanting nanotech augmentations to give you night vision, we've stumbled upon a much simpler way of seeing in the dark, with the added bonus that it has a much lower chance of leaving you with bleeding eyes. It's called the USB Snake light, and for a USB lamp it's kinda cool.

Thanks to a flexible metal neck, you can position this lamp in the most optimal position that you desire, and it won't take up any of your desk real estate. If you choose to hook it up to your laptop, you needn't worry that it's going to suck up all your battery power, as the Snake light only chews through 90 seconds of every hour of battery charge, meaning that you won't be left in the dark while you're browsing through your prOn collection in the closet. The soft light provided by the LED should ensure that the sensitive eyes and skins of albino gamers aren't racked with pain, while its low price of $17 means that even the most stingiest of gamers can afford some USB light.

Chronos USB 2.0 HDD case

SUPPLIER: PCRange www.pcrange.biz
PHONE: (08) 8322 9544 PRICE: $100

If you have a spare 3.5in HDD, a USB port, and a few bucks left over from Xmas, then you have everything you need to enjoy total data portability. The Chronos package includes a quality power-pack, 1.5-metre USB 2.0 cable, a USB-to-IDE driver disk (for Windows 98/SE or earlier) and four HDD retaining screws. Fitting a HDD into the case is a simple five minute task that requires nothing more than a Philips head screwdriver. Once the HDD is assembled and plugged in, Windows detects it and installs the software. Suddenly there is a 'USB Mass Storage Device' listed in My Computer, and you can treat it like any other HDD. Some mobos will even let you boot from it! What's so hot about the Chronos unit? Well, apart from its sleek Aluminium good looks, 480Mb/s transfer rates and total portability, the best thing is that the price is about half that of similar products. USB 2.0 is backward compatible to USB 1.1, so any USB port can be used. Chronos has delivered a great solution for downloading multi-MBs off the Web and then transporting the data home from work/school.

PCCG Rheobus

SUPPLIER: PC Case Gear www.pccasegear.com.au
PHONE: PC Case Gear (03) 9568 0932 **PRICE:** $89

As fans become ever more popular during the summer months, controlling these noisy little tackers becomes more of an issue. Which is why you might be interested in this Rheobus. While there are only four controller knobs on the front of this Rheobus, each is capable of having up to four fans connected to it, giving you the ability to tame a massive 16 fans in total. And we suspect that if you're running 16 fans on your PC, quieting them down could be high on your list of priorities, right behind seeking therapy for your twisted obsession with fans!

Each knob is rated to handle up to 20W, and one of the biggest advantages of this Rheobus over models we've seen previously is that it arrives totally preconstructed. Not to mention the fact that it looks very nice, with a gorgeous Aluminium face. Four high intensity blue LEDs adorn the front of the face, and their intensity is tied to the current speed setting of each controller knob, so you can tell at a glance how fast your fans are spinning. Mind you, you should be able to tell this simply by standing in the same house/hovel/airport in which your computer is located. Gotta love those high-speed fans.

USB phone charger

SUPPLIER: Anyware www.anyware.com.au
PHONE: Anyware (02) 9879 5788 **PRICE:** $15

Don't you just hate it when you get to work only to realise that your mobile phone battery is dead? OK, so it's actually a pleasant relief from the incessant ringing and harassing phone calls we all get on our mobiles throughout the day, but for really important people having a dead phone is the same as committing career Hari-Kari. Sure, these people probably already have a phone charger at their place of slavery, being the organised execs that they are, but if not this could be the perfect device for them.

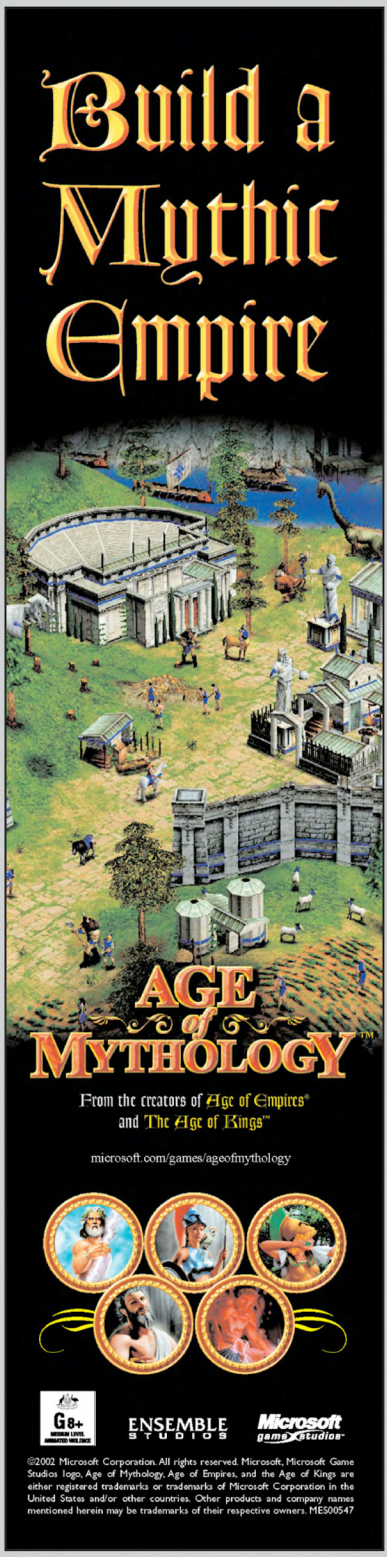
Thanks to three different connections, this charger is compatible with Motorola, Ericsson and Nokia phones, and tops up your mobile phone directly from your USB port. It doesn't seem to charge phone batteries as efficiently as the chargers supplied with each phone, but it does the job and doesn't require a spare power port to do so. Slowly but surely, it seems that USB ports are turning into tiny power points, for everything from lights to devices such as this. Which isn't a bad thing. And at only $15, it's a much cheaper option for the cash strapped than a spare battery charger anway.

Assorted case badges

SUPPLIER: PC Case Gear www.pccasegear.com.au
PHONE: PC Case Gear (03) 9568 0932 **PRICE:** $5.95

Let it be said that if you have an 'Intel Inside' case badge adorning the front of your box, you suck really hard. Likewise with a case badge advertising the fact that you were too poxy to build your own system, and instead bought it pre-constructed from a system builder. Instead, you should be using a custom case badge, and there is a wide range available from PC Case Gear for the pittance of $6.

A variety of phunky phrases and designs are available, with such intellectual gems as 'Shite Inside' and the ever popular 'Illegal Software Inside', for those who run, er, backups regularly. For those of you who've discarded your lives in exchange for a Counter-Strike habit, we're sure the 'Counter-Strike Addict' badge will prove to be most appropriate, so that at LANs your mates will know exactly how sad you are. At any rate, we're fairly sure you'll find something in the range to suit your whacky, off-the-wall taste, and you'll be infinitely less lame as a result. Unless, of course, you end up buying (another) 'Intel Inside' badge. If this is you – you still suck really hard, if not more so.



Return To Castle Wolfenstein: Enemy Territory

WHY WE CARE: **Annihilate more Nazis in the bleakest of shoot 'em ups.**
DEVELOPER: **Mad Doc Software** www.maddocsoftware.com
PUBLISHER: **Activision** www.activision.com.au
PLATFORM: **PC** **RELEASE:** **Q4, 2003**

Around this time last year, FPS fans were getting mighty toey as the much promised sequel to the seminal classic Wolfenstein was on the verge of being let loose for all to enjoy. As we all know the resulting game was a winner, with lots of leather-clad Nazis, demonic beasts from the nether regions and other unnameable eldritch hybrids half-man, half-abomination.

With this in mind it's pleasing to note Return to Castle Wolfenstein will be back with an expansion pack in development.

The new release is called Enemy Territory and it will play as a standalone program. You might recall that last year's release delivered multiplayer and solo fun in equal portions, and thankfully this trend looks like continuing. For a start, in multiplayer mode there will be a whole raft of changes, with some of the most significant revolving around the creation of a new multiplayer character. Those who like to kill while unseen will probably revel in their new role as the Covert Ops guy.

This soldier will be the eponymous stealth expert, with superior skills when it comes to taking out enemies with a silenced Stein gun, using the sniper rifle, or best of all, stealing the uniform of a dead foe and running about behind enemy lines causing mischief. He won't have it all his way, as enemy players will realise they have an impostor in their midst if they target the guy and no friendly name appears above his moving silhouette.

There will also be changes to other established classes like the engineer. The engineer has been beefed up considerably so that he is now a genuinely useful addition to any well-rounded multiplayer team. For a start this tricky fellow will come with a bunch of mines in his inventory which can be tossed into the fray with devastating consequences. Mines can be buried and the engineer will activate them with his trusty pliers.

Enemy players will then find the very ground they walk in is full of hazards. However, you will be able to diffuse enemy laid mines if you are quick enough to notice them. Move onto a mine and you will hear a click, and if you are an engineer character, or can call an engineer team mate, the mine can then be diffused, but all of the time you must stay still, which could be pretty dangerous if you are taking incoming fire.

The engineer will also be able to build gun emplacements and gun towers and will get a new weapon, a rifle, which has a grenade attachment.

The soldier class will also benefit from a few changes. These revolve around new weapons, with soldiers being given access to new emplacement guns which can now be detached and taken with them. Emplacement guns will be close to useless when firing on the run as they will be too heavy to wield accurately, but deploy them and you have something really devastating on your hands. There will be a more deadly, but slower firing, paratrooper assault rifle for you to use in the heat of battle too.

The game will feature a new skill advancement system which renders your specialist skills more effective the more you use them. Use skills more often and you will get quicker at using them. Even better, the longer you stay in a game the higher your hit point total. This system might not make sense in the more conventional team games where you die a lot, but Enemy Territory will also feature multiplayer campaign modes where you and a team of players stay together and survive mission to mission, building your skills as you go. Thankfully Enemy Territory will now feature a much welcome command map interface which will make co-ordinating battlefield action significantly easier.

Additionally, multiplayer action will support bots now as well, which should spice things up considerably.

The game will also feature a fully scripted narrative-driven single player campaign which sees you as the ever-dangerous BJ Blazkowicz, battling Nazi minions in a time before you were captured and taken to the nefarious castle. The game will take you from the deserts of Egypt to the underbelly of southern Europe as you chase the Nazis to their occult lairs.

Interestingly, the teamwork oriented approach of the multiplayer half of the game has also permeated the single player game, with Blazkowicz being aided by a team of US Army Rangers with individual special skills, and an AI which will see you having to do very little to keep them informed about what is going on in the mission.

These Rangers will be able to bring their unique skills to the table at certain points in the game, with the specialist categories in the multiplayer game being probable support classes.

However these guys can also die and you will have to then find a way to win through without them. This is something which will be harder, but not impossible so you won't be frustrated by annoying mission over scenarios when your support troops bite the bullet.

Developers Mad Doc and Slash Damage claim that the AI will be very sharp indeed and while you will be able to give your support units basic commands, these will be largely unnecessary as your support units should be able to handle themselves without you holding their hands too often.

Battle Engine Aquilla

WHY WE CARE: **Lots of enemies on screen all at once in fast moving battles matched by some really slick looking 3D artwork.**
DEVELOPER: **Lost Toys** www.losttoys.co.uk **PUBLISHER:** **Infogrames** www.infogrames.com
PLATFORM: **Xbox / PS2** **RELEASE:** **Q1, 2003**

If you think back to the days of games systems like the 16-bit Super Nintendo and Mega Drive you may remember that one of the most popular genres going was the shoot 'em up. Taking on massive numbers of aliens, enemy tanks, spaceships or anything else was always huge fun in these two dimensional affairs. Massive armies were easily presented on screen thanks to the technical simplicity of putting two dimensional images, called sprites, in view. Classics like Parodius, Area 88 and the much hallowed Raiden were killer games back then and the sense of almost being overwhelmed by superior numbers was always exhilarating.

With the move to the first generation of 3D consoles like the PlayStation, Saturn, and N64, this sort of game disappeared from the release schedules of publishers because the 3D consoles couldn't support really massive numbers of enemies on screen, and two dimensional games, like those that were popular on the 16-bit systems were seen as unpopular because they were too 'low tech' with their static top-down or overhead views. However, with the advent of the latest generation of super-consoles it looks like the manic shoot 'em up will make a return, and one of the most promising games set to deliver massive conflicts in 3D is called Battle Engine Aquilla, being developed by a company called Lost Toys from Guilford in the UK.

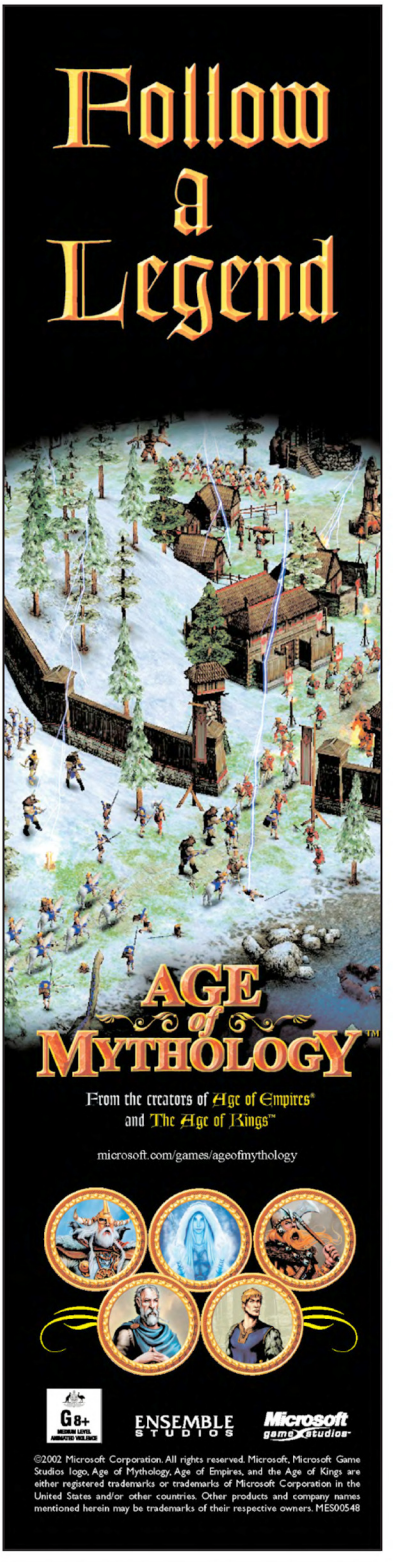
In the game you're the last hope for the technologically advanced, but not very warlike, Forseti, who are losing in a conflict with the Muspellians. Silly names aside, you're tasked with this mighty goal as you control the most powerful and sophisticated war machine your scientists could invent. Unsurprisingly, this engine for battle is called the Battle Engine. This giant mechanoid battle walker has the ability to fly, and to attack using an impressive arsenal of rockets, bombs and laser fire. It also has a land-based form that is even more powerful, but noticeably slower in the movement department.

Battle Engine Aquilla is looking rather spiffy because it not only features humungous conflicts played out between rival futuristic armies in full 3D, but also because the game has such a dynamic approach to the action. Instead of enemies attacking in a predetermined way the game takes an intelligent approach that sees your troops and those of your enemy reacting to events on the battlefield and changing targets to suit.

The action is mapped out on a radar display showing which sections of the battlefield are secure, and those where your troops are under pressure. You can react accordingly, helping out troops in troubled sectors. However there is even more depth in that you can also choose to drop behind enemy lines and take out their tank producing factories, or fly to a hilltop to destroy an enemy artillery fire support base. You can attack enemy bombers to minimise the damage they do or go after an enemy carrier. Each has merits and the enemy will react to your strategies, making a game which will never play the same way twice.

These strategy elements make Battle Engine Aquilla more enjoyable than the average shoot 'em up, and add an RTS element, but you can battle on regardless, shooting everything you see.

Having dealt a blow for the odd little Forseti clan while playing the pre-release code it looks like this game is shaping up to be good old fashioned blasting fun.



V8 Supercar Race Driver

WHY WE CARE: The best V8 touring car racing Down Under on your PC or Xbox thanks to some great 3D effects, clever design and sensitive car controls.
DEVELOPER: Codemasters www.codemasters.co.uk **PUBLISHER: GameNation** www.gamenation.com
PLATFORM: PC / Xbox RELEASE: PC Q2, 2003 / Xbox Q1, 2003

If the smell of high octane fuel and the throaty roar of a big V8 engine is what gets your pulse racing, then very soon you will be able to buy what is looking like the best PC V8 touring car game ever developed.

Forget the average-at-best effort from Electronic Arts called V8 Challenge – Codemasters, the company that developed the great TOCA touring car games, is putting the finishing touches to its new touring car game and it looks to steal pole position.

This game will feature touring cars from all over the world, but best of all, fans of the AVESCO series will be completely supported with a thoroughly localised experience. V8 fans will know that the game has already been released for the PS2 and that in that incarnation it was a solid effort, even if there could have been more cars on track than the dozen or so that the Sony machine could handle.

The PC and Xbox versions will feature more digital drivers on track, with around twenty cars going for it at the same time, and Codemasters will also be updating the liveries so that the cars are more in line with the current driver and team configurations. However it is not certain if the more recent changes to the formula and the 2003 line-up will make it into the game.

As was the case on the PS2, the new game will be called V8 Supercar Race Driver and it is looking like being the best game to feature V8 Supercars to date. Most of the teams from the local competition have been included, with the only notable omission being the HRT car driven by Mark Skaife. Fear not though as other Holden chargers like Murphy and Kelly are on offer. The game will also let you race against or behind the wheel of Fords piloted by Lowndes or Seton.

Even better, many of our hallowed circuits will be reproduced in all of their glory. The tracks you can drive on include Oran Park, Sandown, Adelaide and Bathurst. Canberra will also be on the list, so those of you who lament the loss of the capital city street meet can at least revisit it in the game. Bathurst's Mount Panorama is looking particularly stunning, as it has been recreated digitally with an obvious sense of dedication and attention to detail.

The PC version will deliver a more realistic feel when compared to its PlayStation 2 sibling, with it instantly being noticeable in the preview code how much more sensitive the cars were to deft driver input. This does make the game somewhat harder to punt around with, but it is also more rewarding as well as you feel like you are more realistically ensconced in a top weight tourer, rather than a dodge 'em car with a V8 Supercar shell bolted on top.

V8 Supercar Driver will see you competing in the championship in a narrative mode as a rookie driver called Ryan McKane. You will sign with one of the lesser know V8 teams, and as you progress and achieve goals you will rise up the ranks.

The championship mode will unfold as a story with individual team goals, politics and driver rivalries keeping things interesting between races.

You will even be able to monitor this from your desk in the game as you answer email and correspond with your teams and other people. Ryan has a dark past as his father was killed in a horrific speedway accident, but as the story unfolds he finds his destiny is to avenge his father's demise by being a huge success.

There will also be a fully rendered garage where you can tune your car to perfection. However, all of this atmosphere building stuff would be worthless if there wasn't a great game under the bonnet, and thankfully it looks like Codemasters is not going to disappoint as the driving experience is positively delightful.

There are some great 3D effects such as crash damage, smashing glass and flying bumpers, but the best part of the game is the way the cars handle. Steering on the throttle or braking progressively harder as you come into a corner and hit the apex is a real pleasure (especially if you are using a good PC wheel instead of the keyboard). The sensitivity of the controls is marvellous and you can even use the skid marks issuing forth from the car in front as to indicate how late you can safely brake when trying to overtake.

The producer in charge of the game, Gavin Raeburn, is keen to stress that all of the personalities of the current crop of touring car drivers have been faithfully represented. Gavin says; 'We have gone to great lengths to make this game as realistic as possible and you will notice certain drivers acting like their real world namesakes on the track. This should make for exciting and enjoyable racing'.

The PC version will also feature a LAN multiplayer-racing mode, while the Xbox version will probably feature four-player quadrant screen hooning.

The game is headed to the PC and Xbox formats in the next month or so and it will offer a more arcade-oriented approach as well as action for hardcore simulation fans.

Crime Scene Investigation

WHY WE CARE: **If you like the show and have a penchant for dribbly stains of all sorts then this game will no doubt excite.**
DEVELOPER: **Radical Entertainment** www.radical.ca **PUBLISHER:** **UbiSoft** www.ubisoft.com
PLATFORM: **PC** **RELEASE:** **Q2, 2003**

Even though there are clearly way too many murder-obsessed crime shows on the telly at the moment, one program has stood out and dominated the ratings over the last year or so. *Crime Scene Investigation* has been a huge hit on the idiot box in the USA and here at home. The program's focus on the meticulous examination of gory forensic evidence has been a major factor in its success.

Detailed examination of blood spots, DNA evidence hidden away under victim's fingernails and other more grisly details will no doubt be a part of the game based on the series, currently being cooked up by Radical Entertainment.

The game will see you don the accoutrements of a rookie investigator and helping the regular cast from the show in around half a dozen cases.

Your goal will be to not only find the killers in a number of increasingly difficult and bizarre murder cases, but to win the respect of your boss, the aloof and often downright weird Gil Grissom.

The rest of the *CSI* team will also be featured in the game and the digital alter egos of the crew are looking fairly solid. It is expected the game will feature voiceovers from the cast, but at this point this hasn't been confirmed.

Players will be able to draw on help from other *CSI* team members too, including a partner, who will accompany you on each mission and aid you in solving the case. As you'd expect, you'll need to work closely with the lab technician and the medical people, to piece together the forensic evidence.

Like the series, the game is set in Las Vegas and the environments you will visit include the CSI lab, the morgue, Grissom's office, the interrogation room and a variety of crime scenes, bursting at the seams with forensic data. The game will begin with you investigating the relatively straightforward murder of a prostitute. Successive missions will become more complex, with the final mission focusing on troubles within the walls of the CSI HQ itself as Grissom is kidnapped and you have a limited time to save the day.

Other missions will challenge you to solve the murderous late night bashing of a blind tourist on the Vegas streets, a copycat murder, and a home invasion which sees a high profile executive killed.

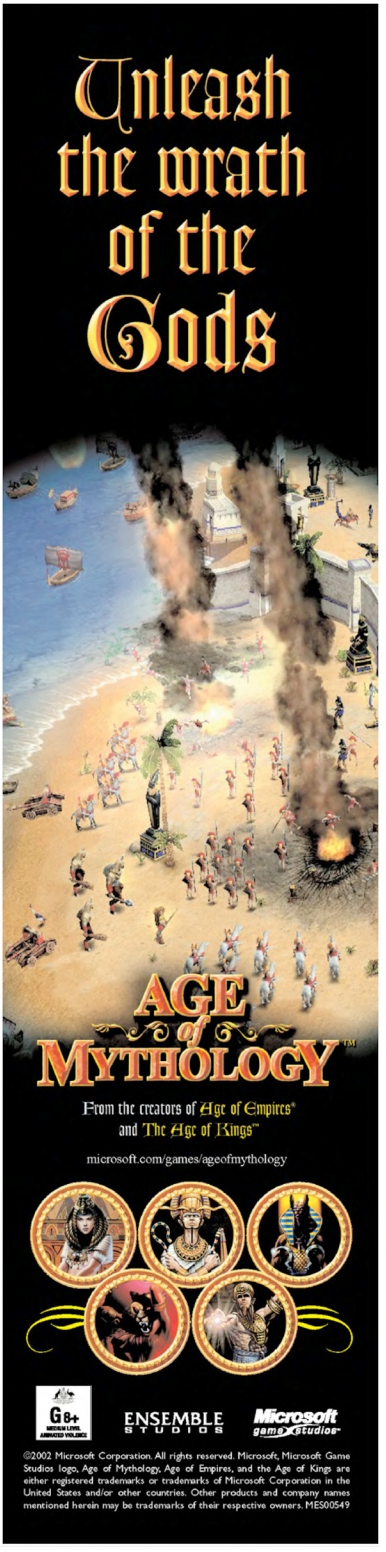
The game will also watch out for players who appear to be struggling with each mission and will effectively dumb down the game when a player gets stuck.

So if you're unable to work out what to do next, the game will give you progressively more help and stop you from wasting time on lines of investigation that are wrong.

CSI will include harder puzzles for more savvy players, who will be rewarded with a growing arsenal of spy gadgets as they probe deeper into each of the six game levels.

This release looks like being an unusual game in the current climate in that it will essentially be a point and click adventure. This genre has been dying a slow death for some time, with little innovation in recent years and realtime 3D Quake-style action titles taking over.

It will be interesting to see if the popular subject matter, combined with the fresh approach that the developer is claiming to bring to the game, results in a successful re-emergence of what has been one of the oldest and most established game genres on the PC.



Artificial intelligence in computer games

Games too smart for you – how about not enough? John Simpson delves into the story behind the AI that drives games forward – the same AI that drives Marines into minefields.

ABOVE: 'Tread marks', a new title from Tantalus Interactive, features intelligent tanks that behave in accordance with the environment. Each tank has its own personality, and promises to pose a real challenge by using Neural net AI.

It's been eighteen months since we had to sit through the movie ***AI: Artificial Intelligence***. The film starts out quite well, with William Hurt explaining the difficulties of designing a thinking machine, while a good looking androidess takes off her clothes and does a neat trick with her face. Then it all goes pear-shaped, as the film hits its second hour and we're wondering what the hell's going on. Blue lady? Critics unanimously agreed it was like watching Disney do ***Close Encounters***, without the mystery and mashed potato.

The real life science of artificial intelligence is not so different – lots of hype and not a lot to show for it. Getting R2-D2 from the screen to our lounge rooms has been a real struggle – the best effort to date is a silver dog that runs out of batteries in two hours (then isn't smart enough to recharge itself). Let's face it – ***The Matrix*** is looking a long way off.

There is however one bright star in the AI sky: computer games.

If you thought the enemies in the latest first person shooters are getting smarter, you're right. There have been significant advances in the past couple of years in game AI, with a lot of the work being developed in Australia by companies such as Tantalus and Blue Tongue. It may not be long before games can watch, learn and improve on our best moves. . . then turn them against us.

A brief history of AI

There's a true story about an 18th century Baron – Wolfgang von Kempelen – who invented a chess-playing machine for the amusement of Austrian Queen Maria Theresia. The clockwork machine, named 'The Turk', was shaped like a mechanical man positioned over a chessboard. At performances, Kempelen would open the doors in the platform underneath the chessboard, revealing a latticework of gears and machinery, then challenge audience members to play. Almost all were defeated by the machine, which even staged a humiliating defeat against Napoléon the First.

In 1826 The Turk passed into the hands of inventor Johann Maelzel, who took it on its infamous American tour, playing names such as Benjamin Franklin and Edgar Allan Poe.

It wasn't until 1857 – three years after the Turk had been destroyed in a fire and nineteen years after Maelzel died — that Maelzel's son, The Turk's final owner, revealed its secret: an expert chess player hiding inside.

Mankind's fascination with intelligent machines has been around for ages: from the ancient Greeks and their mechanical models, to Pascal's invention of the world's first mechanical calculator in 1642 – 'thinking' machinery has always pulled crowds. But it was in the twentieth century that the field really began to take a front row.

The word 'robot' first appeared in 1950, in a play by Karel Capek (from the Czech word *robota* meaning serf or 'forced labour' – the word was reportedly snapped at Karel by his brother in a hissy fit). 'Cybernetics' and 'artificial intelligence' came soon after, riding on the wave of interest from Alan Turing's article *Computing Machinery and Intelligence* (in it, Turing showed how to test intelligent behaviour in machines (see note, *page 31*) – it's still a legitimate test today).

That same year, Isaac Asimov wrote the *Three Laws of Robotics* in his book *I, Robot*:

1. A robot may not harm a human being, or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given to it by the human beings, except where such orders would conflict with the First Law.
3. A robot must protect its own existence, as long as such protection does not conflict the First or Second Law.

These Laws are regarded as fundamental to the future of AI, although some scientists question how they would hold for robots working in dangerous areas, or military 'bots. Games obviously don't have to follow these rules, allowing more flexibility – although as virtual reality advances the Laws may become increasingly important.

History of AI in games

Remember Pac-man, the annoying yellow blob that ate pixel blocks and spawned a new generation of gamers? One of the reasons it was so popular was that the ghosts seemed intelligent. Players had to evade capture, turning the tables after eating a power-up. Despite the simplicity, Pacman formed the basis of the games we play today.

Things moved up a notch with the advent of first person shooters. Like jumping into the Pac-man maze, games like Castle Wolfenstein and Doom introduced enemies that would attack on sight – but they were often so stupid they'd walk straight into gunfire. It took a number of years before Valve released a game that changed it all: Half-Life. Half-Life had bad guys that would do different things when

ABOVE: These screenshots show the minimal differences between 'Jurassic Park: Operation Genesis' on the PC (top row) and Xbox (bottom row). Blue Tongue (the Melbourne-based developer) promises a strategy game with action-oriented sequences, all controlled by the next generation of game AI. JP:OG is due early in 2003.

shot; they'd react to thrown grenades; and they'd even demonstrate a realistic awareness of the player. Half-Life produced an interesting shift in games: from better graphics to more intelligent enemies.

The AI in FPS games today has evolved to remarkable levels. Enemies will hide behind cover if approached; they'll react realistically if outnumbered or outgunned; and they'll even try and throw a grenade back at the player.

These combat AIs are very close to the real thing – although they still can't beat a seasoned player. Why?

The reason is that human opponents have four basic behaviours that – to date – AIs can only try and simulate. Let's look at each a little more closely. . .

1. Environment utilisation

A combat AI can be programmed to hide behind a box if under fire. But only a human player will make use of that box in other ways – eg. using it as a weapon, or perhaps a floatation device. Unless specifically instructed, the game AI will always behave predictably.

Because of this, combat AIs can't use terrain as effectively as a human player. Humans tend to be much better at ambushing or concealment, whereas AIs can only use the environment in ways they've been instructed.

2. Teamwork strategies

Teamwork shines when clans play a game like Counter-Strike. Each player makes use of their best skills together with other players, sometimes sacrificing themselves for the benefit of the team. Combat AIs are more solitary in their behaviour, and appear (from the outside) to behave almost selfishly.

Getting AIs to interact as an effective team is extremely difficult. Let's face it: it's hard enough teaming real people together. For now we have to be satisfied with individual opponent AIs flocking together – a pseudo-team.

3. Hunting

The ghosts in Pac-man were programmed to seek out the player using the shortest possible route. Interestingly, FPSes seem to have taken a step back: now the player takes the predatory role – the enemies are invariably left to guard.

If attacked, AI opponents must decide a course of limited actions as quickly as possible. This makes life a lot easier for the game developers, but not so satisfying for the human players.

Turn the tables: what if the AIs are the predators and the humans are the guards? Currently, this scenario sees single-minded attackers pounding the human players (like the bugs in the movie *Starship Troopers*). But what if the AIs could form strategies and learn from previous experiences? Difficulty levels would increase each time you played, like a real person improving their strike technique.

4. Survival

There's a scene in *AI: Artificial Intelligence* where the discarded robots run through a forest, chased by the 'moon balloon' of the robot equivalent of the KKK. This illustrates a very human behaviour – an instinct for survival. Humans can balance this behaviour accordingly, depending on the scenario. Choices to run, hide or fight will be dynamic – we'll change our strategies according to everything we've learnt in that game session and all previous sessions.

Current game AIs can only mimic this behaviour. They have very little reason to stay 'alive'. Sure, their programming will tell them to hide where they can, attack if being attacked. . . but their need to survive is essentially zero – which is reflected in their behaviour.

Humans use these four skills automatically and with great success. Game AI, on the other hand, has trouble with each one individually. And even if AIs could develop each characteristic, how would they balance them out? If the AIs had strong feelings of self-preservation they'd all run away. If they teamed together seamlessly, they would be impossible to beat. We're still a long way from the perfect solution.

How to build a thinking computer

Developers will tell you that building anything remotely intelligent into a game involves a lot of hard work: variables upon variables, conditions upon conditions. Let's take a real-world example: your brain says you need a beer. You immediately run through a list of options: what type of beer? Do we have beer? Have I had too many already? And so on and so on.

Then you navigate your way to the fridge – you've done it hundreds of times before, but there could be unforseen obstacles in the way (the vacuum cleaner; empty beer cans; a naked housemate). When you're at the fridge, you may change your mind and have a sandwich. You may even ignore the fridge and give your full attention to the naked housemate instead.

Despite the simplicity of the primary instruction, the final result took a lot of intermediate steps. This is what game builders have to contend with, as players constantly try to outsmart and outmanoeuvre their computerised opponents.

I asked the guys at Tantalus Interactive the steps they take when defining a game AI. . .

'It's mainly about defining goals and then creating algorithms to obtain those goals,' says Andrew Bailey, Tantalus' chief engineer. 'We tend to use multi-tiered AI. Take the AI in a driving game: a top tier decides how to play the game, while a lower tier decides how to carry out that decision (ie. how to drive the car). There might also be a middle tier, to handle things like navigation.

'Each tier is quite different. The top is usually a simple script, with a bit of fuzzy logic (read: random) thrown in. The middle is a map traversal routine. The bottom layer is a translation matrix (a hand-coded "neural net"), which converts environment input into movement outputs.'

Game AI programmers work with three basic concepts. The first is called flocking, where one element decides how to behave according to others around it. Flocking first appeared in 1987, when Craig Reynolds presented a computer model to the SIGGRAPH convention that replicated the movements of animals (flocks of birds and schools of fish). Reynolds called his simulated creatures 'boids'.

By using these steering behaviours, game developers could finally determine how an army would attack in the heat of battle, or how cars would move together after the race starts. Today, a variation of the model is even used in motion picture CGI for realistic organic movement (the 1992 film *Batman Returns* was the first to use it to simulate a swarm of bats).

Second on the list is A-Life: trying to breathe artificial life into a program. If you can avoid the hairy question of 'what is life?' there are some models that do remarkable well at mimicking organic behaviour. Microsoft's Terrarium (www.gotdotnet.com/terrarium) is a good example. Terrarium is a multiplayer world in which users can create their own creatures, and then set them loose in the environment. The object is to build a creature that out-survives all the others. You can chat to support groups, download others' creatures, or just screw around with the concept of A-Life.

While this simulates A-Life, it's dubious that each program considers itself to be alive. And simulating a bug is a long way away from simulating a person.

The third key concept is pathfinding. Game reviewers like to talk about this endlessly, with most pathfinding routines failing to impress. Ironically, almost every pathfinding routine is based on a 'magic algorithm' called the A* algorithm. Theoretically, it's a terrific piece of mathematics. In practice, its biggest problem is that implementing the algorithm is very game-specific. Change one variable of the environment and characters will get stuck behind doors, or stumble aimlessly into dens of orcs. You can watch it in all its frustrating glory in Rollercoaster Tycoon, as your park cleaners wander in little circles (how much am I paying you little buggers?).

To avoid the problems of repetitive, irritatingly stupid behaviour, programmers try to simulate the learning process with neural nets. Sounding like something from *Star Trek*, neural nets model their behaviour on things they have encountered in the past – just like people do.

It sounds like the perfect solution, but neural nets also have their difficulties. 'Neural nets have problems in training,' says Andrew Bailey. 'The way to train a neural net is to manually take it through many examples many times – it then learns patterns to avoid, or replicate. The problem comes when the trainers are inconsistent.'

Trainers may vary in their approaches, not just across a team, but within themselves. That's the advantage of being human – we can adapt quickly. This doesn't help a neural net at all, which is looking for a consistent response each and every time.

So where's the best place to start if you want to build a game AI? Many programmers believe Tetris is a great example, and fairly easy to program. From there you could try a platform game. Stuart McMahon (Tantalus AI Programmer) worked on Woody Woodpecker for the Game Boy Advance:

'The rules are fairly basic, but combining them can give the impression of intelligence,' he says. However, the GBA poses another challenge: 'The AI uses the same physics system as the player, which can eat into CPU time and sprite bandwidth – both limited on the GBA. To avoid these problems, we make it so that if you can't see an opponent, they're probably either cheating or asleep.'

It's all black and white

A recent example of a 'learning' AI was in Peter Molyneux's Black & White. While the complexity of the final AI was staggering in programming terms, the basic concepts were quite simple.

The behaviour of each creature is based on a series of attributes (hunger, playfulness, etc). Each of these is assigned a table of variables. When a creature is born, his hunger table may contain equal values for 'rock' and 'cow'. But when the creature eats a rock, the hunger value for that object goes down. If he eats a cow, it goes up. The creature 'learns' what's tasty and what's not.

The cool part of this game is that the user also has input into how the creature behaves. If you want your creature to eat enemy villagers, the process follows a hierarchy. First, the creature eats a random villager and is rewarded with a pat (hunger table for 'villager' goes up). But the next time he eats a good villager he's

ABOVE: The Woody Woodpecker GBA game (Tantalus) uses a common technique with game opponents: switch off those outside the screen boundaries. It saves processor effort, but impacts on continuity of learned behaviour.

ABOVE: The next 'Top Gear Rally' game for the GBA uses various levels of AI to enable the opponent cars to drive, navigate and compete. Despite the restrictive size of the GBA platform, each car appears to behave with its own agenda.

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punished; when he eats a bad villager he's rewarded. A tree of behaviour is established: villagers are tasty, he realises, but I should only eat the bad ones.

By continuously updating the creature tables, the creature appears to learn. (Interestingly, some reluctance was built-in to the learning behaviours – otherwise, the creatures would eventually become too 'robotic' in nature.) It can be a drawn-out process, but a largely satisfying one.

The next steps?

At a recent game developers' conference in London, B&W's chief engineer Richard Evans spoke about an exciting new game being developed at Lionhead Studios – code-named Dmitry.

The key difference in this AI is that it exhibits a social consciousness, or a 'hive mind'.

'I was playing The Sims recently and noticed that a character disappeared in the middle of a conversation,' Evans said. 'The same thing happened in Black & White too – a creature went off to poo in the middle of a conversation.

It was clear they did not understand the social consequences of terminating a conversation so abrutly.'

Social behaviour and consequences are ingrained into organic behaviour – so much so that we take them for granted. Evans argues that this is the key thing missing from game AI.

In Dmitry '. . . if someone is hurt everyone will gather round and try to help,' he says. Characters will fight if there's a reason (sometimes even if there's not); there will be romances, bullying, cheering; even the ability to dynamically create a new language.

The important thing is that, while there's an overall guiding morality, individual characters may also behave on extreme scales – with severe consequences.

'The bad guys might request you to vandalise something, but that will send messages to others and they will request other characters to come and beat you up,' Evans said. Sounds scary.

All that said, the future of game AI is largely speculation. Artificial intelligence implies that a machine has the ability to think for itself. Deep Blue, IBM's chess computer, beat the world's chess champion in 1997, but it only did so by calculating 200,000 moves in advance. Is this intelligence, or just a really fast calculator?

Perhaps there's something else we need to give computers before they become our equals.

'Imagine being able to develop an AI Formula 1 car that behaved just like Michael Schumacher, and that could actually predict how Schumacher would respond to events and scenarios,' says Andrew Bailey (Tantalus). 'Every game developer is looking for a way to make AI "more human".'

But is being 'more human' a good thing? Will games refuse to load because they're too tired? Would they prefer to watch TV instead?

Could they become emotional and depressed without a daily dose of social interaction? Take the latest Japanese craze: 'virtual girlfriends'. These A-Life software simulators mimic young girls, with most packages aimed at girls in the same age bracket. There's also a model for shy Japanese boys, which guarantees all the fun and excitement of real dating, without the fear of rejection.

Bailey cautions against developing AIs that are too unrestricted: 'I think the problem with "learning AI' systems is that you lose the ability to design the game. An AI that learns and acts by itself could produce untested behaviour, outside the design of the game. A bit like a film where the actors aren't being controlled by the Director.'

There are some interesting times ahead for game developers using AI to breathe life into their games, and even more so for gamers. The next decade is going to be a real eye opener.

An AI timeline

5th century BC: Aristotle invents syllogistic logic, the first formal deductive reasoning system.
15th-16th century: Clocks, the first mechanical measuring machines, are made. Mechanical animals follow.
17th century: Descartes proposes that we are simply 'complex machines'. Pascal creates the first mechanical digital calculating machine.
18th century: Von Kempelen's phoney mechanical chess player, The Turk, stuns the world.
19th century: Charles Babbage makes advances in programmable mechanical calculating machines.
1923: Kapek's play *Rossum's Universal Robots* opens in London – the first time the word robot is used in English.
1948: Rosenblueth, Wiener & Bigelow first use the term *cybernetics* in a research paper.
1950: Alan Turing publishes the landmark paper *Computing Machinery and Intelligence.* Isaac Asimov publishes his *Three Laws of Robotics.*
1956: John McCarthy coins the term artificial intelligence. Newell, Shaw & Simon demonstrate the first running AI program, the Logic Theorist.
1962: Arthur Samuel (IBM) releases the first game-playing program – for checkers.
1962: The first industrial robot company, Unimation, is founded.
1965: Doug Engelbart invents the mouse at SRI.
1966: Ross Quillian demonstrates semantic nets.
1967: Richard Greenblatt at MIT builds a knowledge-based chess program, MacHack – which achieved a class-C rating in tournament play.
1969: First International Joint Conference on Artificial Intelligence (IJCAI) held at Stanford.
1975: David Marr and MIT colleagues describe the primal sketch and its role in visual perception.
1978: Herb Simon wins the Nobel Prize in Economics for his theory of bounded rationality, one of the cornerstones of AI known as 'satisficing'.
1979: The Stanford Cart, built by Hans Moravec, the first computer-controlled autonomous vehicle.
1981: Danny Hillis designs the Connection Machine, a massively parallel architecture that brings new power to AI and computation in general.
1985: Neural networks become widely used with the Backpropagation algorithm.
1989: Dean Pomerleau at CMU creates ALVINN (An Autonomous Land Vehicle in a Neural Network), driving a car coast-to-coast.
1990s: Major advances in AI, including virtual reality and games.
1997: The Deep Blue chess program beats the current world chess champion, Garry Kasparov.
2000: Interactive robot pets become commercially available, realising the vision of the 18th century novelty toy makers.

References

- Buchanan, Bruce G. *Brief History of Artificial Intelligence.* University of Pittsburgh, 1999.
- Cohen, Jonathan. *Human Robots in Myth and Science.* NY: A.S.Barnes, 1967.
- Dybsand, Eric. *Game AI.com* (Website). www.gameai.com
- Microsoft et al. *Terrarium* (Website). www.gotdotnet.com/terrarium
- Schreiner, Tim. *Artificial Intelligence in Game Design* (Website). www.ai-depot.com

AI and games – the future

At a recent AIMIA lunch for the Australian games industry, John Simpson had a chance to chat with Andrew Heath, Chief Operations Officer with the Melbourne-based developer Blue Tongue. Here's what Andrew had to share. . .

Q: Do you have any current PC or console games in production that use AI?

A: Jurassic Park: Operation Genesis (launch date Q1, 2003) is the main title we are working on at the moment, and certainly, it has some very advanced AI features.

We're currently working on some other projects as well, but as yet we can't be more specific, but they also use some quite advanced AI.

Q: How is the AI in JP different to what we've seen previously? Have there been any major breakthroughs?

A: The JP AI is some of the most advanced game AI technology seen to date. With this game we have based all AI of the park visitors and the dinosaurs on a complex set of heuristics, coupled with advanced Neural net programming – all the behaviours of objects in the park are based on both 'natural tendencies' and on learned behaviour.

Herbivores will naturally have a tendency to run away from carnivores, however learning that there is safety in numbers, flocking behaviour and defence is actually learned by the game objects. Also, if you build a park that is biased towards high level dinosaur action, you'll attract the thrill seekers to your park. If your park has an ecological bent, then you'll attract those visitors who prefer the more natural attractions (read: greenies). None of the behaviours and interactions are pre-determined – they occur naturally in real time.

Q: How do you begin engineering the AI? What steps do you take, from deciding how characters should behave, to actually seeing their behaviour on-screen?

A: The Blue Tongue AI system was designed to meet a number of objectives:

1. Decoupled interaction – allowing an evolutionary approach to game balancing and design change, as new objects can be dropped into the world and are immediately recognised by other objects without any change to the existing object definitions.

2. Data driven – all objects are self-contained, and all balancing attributes are dynamically bound, substantially reducing the time taken for balancing iterations, and removing this responsibility away from coders entirely.

3. Predictably unpredictable – We want objects to behave in predictable ways, but want to also constrain this behaviour to designed limits to reduce the error space.

A truly 'emergent behaviour' environment, with unpredictable results, is a testing nightmare. As emergent behaviour is by definition not dictated by design, controlling the results is typically intractable.

However, there is an appeal in having interactions that – while bounded in possible outcomes – have outcomes that isn't. This helps create variety for the user.

4. Constrained learning – once again, the results must be constrained unpredictable. Learning is therefore limited to adaptation of perception.

For instance, in Jurassic Park, dinosaurs become more wary of safari Jeeps and ranger helicopters if they are hurt by them. Also important to this model is the notion of forgetting. This is another way of limiting scope for error.

Based on these objectives, Blue Tongue created it's AI's Behavioural Drive System as part of its ToshiR engine.

The basic AI flow is as follows:

1. Establish the world;
2. Perceive the world;
3. Calculate Drive Magnitudes;
4. Determine the Primary Drive; and
5. Execute the associated behaviour.

Drives are the heuristics that determine the behaviour modes. These are things like Hunger, Thirst, Tiredness, Fear, Territory Protection, and Playfulness.

Q: Are there generic AI engines that are reused (eg. Doom 2 engine)? If so, which is currently the most capable, and why?

A: There are a number of AI engines from middleware developers available, however at this stage most games have specific requirements of AI, so for some specific types of games, they might be useful, but in our experience there is none that compares to the capabilities of our senior programmers.

Q: How is the AI in computer games different to AI in robots (eg: AIBO)? How is it similar?

A: The basic AI flow as above is pretty much the same whether you are developing games or programming robots.

The main factors that affect the complexity are the number of drives, and the number of behaviours available to that which is being programmed. Obviously the more drives and the more possible actions, the more complex the AI matrix, and the behaviour learning matrix.

Q: There must be a great deal of research time involved with game AI – where do you pull your research from?

A: Very fortunately, Blue Tongue has staff that have had many years of experience in developing AI systems.

At the moment, we do all our research and development on AI in-house.

Q: What are the major stumbling blocks in current AI technology?

A: Really, the biggest stumbling block is being able to understand and keep track of the complexity of drives. By using neural networks to calculate drives, obviously there ends up being a bit of a black box in terms of determining behaviours.

At the end of the day, we are only limited by our creativeness, and the user's CPU.

Q: What do you see for the future of AI in gaming?

A: The level of expectation of the public in creating realistic worlds is becoming higher and higher each day. I wouldn't say that there is necessarily any finite limit to AI, and considering that we only use about 10% of our own brain capacity, there is certainly the possibility of AI exceeding our capabilities.

When it comes specifically to games though, predictability of behaviour can be a good thing, and it is all about the game experience. You still have to make the game fun. We think that we have the mix just about right.

Note: *The Turing Test is designed to determine if a computer program has intelligence. A person (A), a machine (B), and an interrogator (C) play an 'imitation game'.*

The interrogator can't see the other two, and tries to work out which one is the machine, and which is the human – only by asking them questions. If the machine can 'fool' the interrogator, it must be intelligent.

OpenGL 2.0 vs DirectX 9

Sick of only seeing the features of your video card shown off in benchmarks? Never fear, for James Wang sees big changes ahead.

When the first 3D games emerged, the game developers demanded more features and speed than even the fastest 3D accelerators could offer. Some eight years later, the best of 3D games, even those yet to be released, don't even scratch the potential of a $200 video card.

Why? In the pioneering days of 3D acceleration, it seems everyday someone would claim to have a killer engine. Everyday a new idea would pop up: voxels, quads, NURBS – you name it. Since then, the 3D market has expanded many magnitudes over. The technologies, documentation and experiences have all ripened. But where's the jaw dropping graphics? Will we ever be awed as we did in the first live running of Tomb Raider on Voodoo Graphics? The question that begs an answer is: why have developers been outstripped in graphics technology by 3D vendors?

Features are gimmicks

Does it not bother you what happened to such hyped and promising technologies like Environmental Bump Mapping? What about T&L or T-buffer? Wouldn't it be good to know which features are essentially doomed to be duds and which will be the next big hit? The good news is in the future, there won't be any new 'features'.

A feature such as T&L or EMBM requires dedicated silicon. In the unlikely event that developers wish to implement this feature, they will need to write two sets of code: one to support this feature and another if the host machine's video card does not support this feature.

When you have a handful of vendors pushing unique and often proprietary technologies, it requires so much redundant coding that no developer in their right mind (unless paid for by a vendor, as often is the case) would implement all the graphics technologies available at the time. The phenomenon of multiple, vendor-dependent feature sets and shifting target platform are the main reasons 3D technology has outstripped the speed in which it can be adopted. The only solution is to find a way for the developer to write code without worrying about the hardware that will be executing it. In other words: we need a machine-independent, higher level shading language. This is the essence of DirectX 9 and OpenGL 2.0.

ABOVE: We are reaching a stage where CGI artists can feed slightly re-worked and cut-down versions of movie production media into a GPU and render at near real time speed using multi-pass algorithms. Eventually, older CGI productions will be able to be done in real time with little visual difference.

DirectX 8 was revolutionary because it introduced programmability into the graphics pipeline – but it didn't help with the issue of diverging standards. All the programmability in the world isn't going to be realised if the developer is faced with v1.0, v1.1 and v1.4 shaders, each for a specific vendor.

To give games the benefits of shaders faster, we need to save programmers the time used in making vendor-specific adjustments for their games. After all, not all developers are as fanatical as Carmack, who wrote a different rendering path for nearly every graphics card released since the Geforce 256 for Doom III. With the introduction of DirectX 9 and OpenGL 2.0, ideally only one set of code will be written and the time saved spent on more important things.

A Higher Level Shading Language's (HLSL) core characteristic is abstraction from hardware. Any shader code, no matter how complex, should automatically be decomposed by the compiler to multi-pass on the host video card. For example, code written in an HLSL that's 100 vertex instructions long should be done in one cycle on a GPU which can deal with 100 instructions per cycle but automatically decompose into multiple passes on less capable GPUs. This way the developer can write code that targets the fastest GPUs and not worry that half the world's machines won't run. It'll definitely be slow when multi-passed on less capable processors, but by scaling down the resolution, one can still see the shader effects as they were intended.

A few conditions need to be met before either language becomes useful. The first is a large installed user base of DirectX 8-level hardware. This won't happen for at least another year and until then, HLSL won't be able to flex its muscles. Unavoidably, some effects can't be decomposed into DirectX 7 operations. The second requirement is good compilers which can decompose HLSL into machine code with relative efficiency. NVIDIA's Cg compiler is the only one available. With these two in place, a developer can finally hope to make use of shaders with confidence and perhaps catch up with the blazing development in 3D technology.

DX 8 vs. DX 9 shaders

In the DirectX 8 era, shaders were programmable but with severe limitations – you couldn't control them. Suppose you want to run a vertex shader over a triangle mesh. You could write a long string of instructions and execute it. But you could not make conditional branches like 'if the current state is such, then execute this shader, if not, go down the other shader path instead.' Conditional branches which are at the heart of true programmability weren't available. Another essential ingredient that was missing was loop functionality. Loops allow you to perform a specific task indefinitely until a

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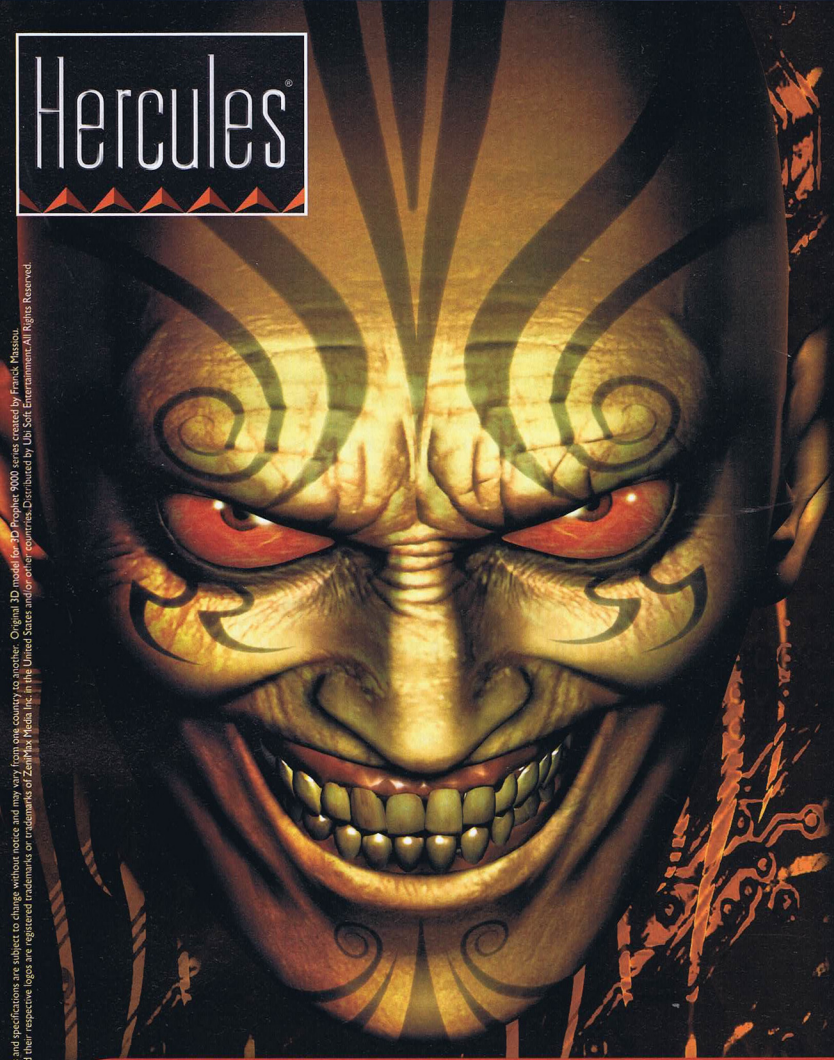

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certain condition has been reached. You may want to repeat certain shaders until a desired effect has been reached. With the inclusion of loops and conditional branching into the vertex and pixel shaders, the new higher level shading languages finally brings programmability to a near CPU level.

With new flexibility also comes new trouble. When working with loops and shaders, the accuracy of the input will tend to degrade as each loop is executed if the value is not kept in a high precision format. It does no good to go through thousands of calculations when you are always rounding to the nearest integer: in the end your data has accumulated too much error to be useful. This is why, along with the introduction of long loop-able shaders, has come a floating point representation for data. Floating point preserves decimal places so your data can go through myriad twists of shader routes and still come out relatively accurate. Colour depths of 96-bit and 128-bit colour are supported, which is in same league as that of CGI production.

Up until now, we've discussed the core essentials that are common between OpenGL 2.0, DirectX 9, and Cg. Because their goals are the same, their differences are actually quite subtle. Any one of the three languages will be a huge leap over what we have today. Most of the differences are motivated either by industry politics or syntax wars.

OpenGL 2.0 – due end of 2002

The chief body promoting this standard is 3D Labs. NVIDIA proposed an alternative named 'Cg', which received only one vote – from NVIDIA. There's also a Stanford model which is well known but does not allow easy backward compatibility to the existing GL1.3 standard and hence the 3D Labs proposal is now set as the shading language for OpenGL 2.0. As the Architectural Review Board that governs OpenGL incorporates many vendors from a variety of fields (Intel, SGI, NVIDIA etc), forming a standard which all agree on is a difficult process. The core specs have been nailed down and a beta compiler is available for download. One of the chief benefits of OpenGL is allowing vendors to write their own extensions that expose specific features not found in the core specification, making OpenGL the top choice when creating new tech demos.

Currently, the OpenGL 2.0 core specification does not support tessellation. Because of the varied implementations of tessellation on current 3D hardware (NVIDIA with polynomial surfaces, ATI with N-patches and Matrox with displacement maps), no firm consensus could be reached as each has its fair share of pros and cons. This is not a large drawback as developer support for tessellation is virtually non-existent.

DirectX 9 – due end of 2002

Controlled by Microsoft and created in close collaboration with NVIDIA and input from ATI, the DX 9 HLSL is relatively free from the bureaucratic and political mess of the OpenGL Architectural Review Board. The benefits are that specs can be nailed down fast and a rigid standard can be formed to guarantee compatibility. DirectX 9 will offer two levels of shader compliance: version 2.0 and 3.0.

The specification for version 3.0 goes beyond the capabilities of both the R300 and NV30 as it requires dynamic branching in both vertex and pixel shaders. This will ensure the longevity of this version by returning the API as the superset of the hardware.

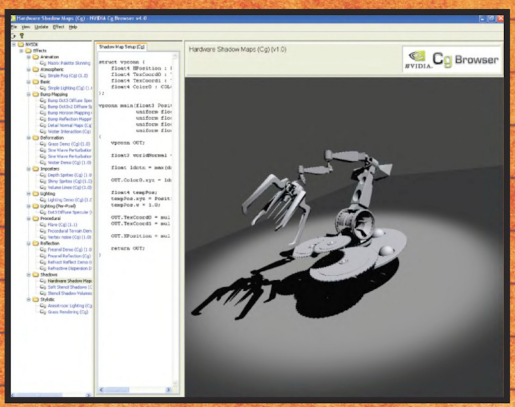
A downside of DirectX is the inability for specific vendors to reveal untapped features by writing their custom extensions. DirectX 9 specifications are not yet published by Microsoft, hence the details are not yet finalised.

Cg – available now

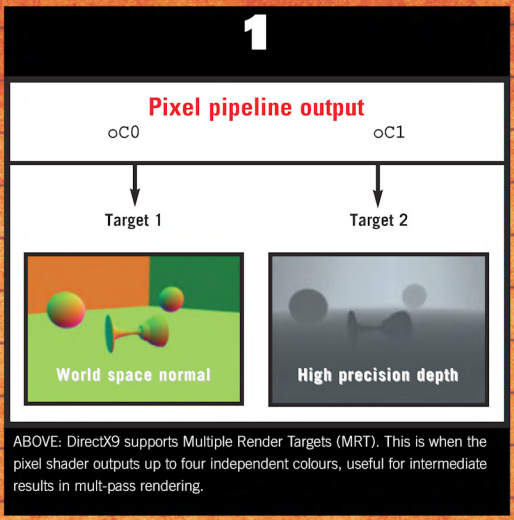
NVIDIA's Cg HLSL is almost identical to DirectX 9's shading language in syntax. Cg doesn't compete with the other two, and instead acts as a layer that sits on top. The amount of information regarding Cg is both abundant and contradictory. The official line is Cg syntax is just like DirectX 9 and it will compile to assembly code as well as OpenGL. Cg's biggest benefit is allowing easy cross-platform shader development. Traditionally any developer who wishes to go multiplatform must use OpenGL. Code written in Cg on the other hand should gracefully compile on Windows and Linux machines, while still using the Cg/DirectX syntax. Cg also allows individual vendors to write custom profiles and compilers to optimise for their own hardware.

From HLSL to Renderman

NVIDIA claims *Final Fantasy* in real time on NV30. ATI claims *Lord of the Rings* on RADEON 9700. So how far is there left to go? After seeing Nature for 3DMark2001SE Pro and then Doom III in action, one has to wonder how far before our new shaders catch up with Renderman shaders, the industry standard for CGI. Things are now looking much closer than a



ABOVE: Two samples from NVIDIA's Cg shader toolkit. The left image shows hardware shadow maps and the right shows refraction and reflection effects.

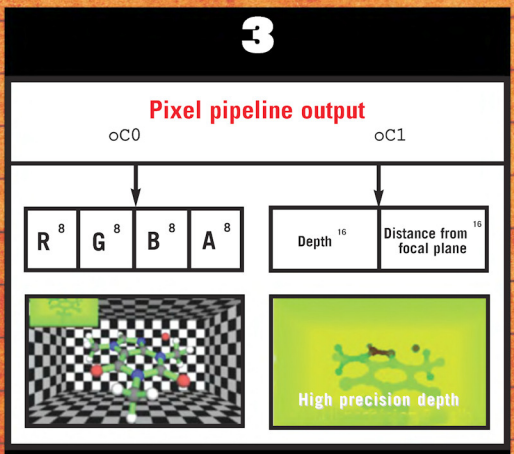


ABOVE: DirectX9 supports Multiple Render Targets (MRT). This is when the pixel shader outputs up to four independent colours, useful for intermediate results in mult-pass rendering.

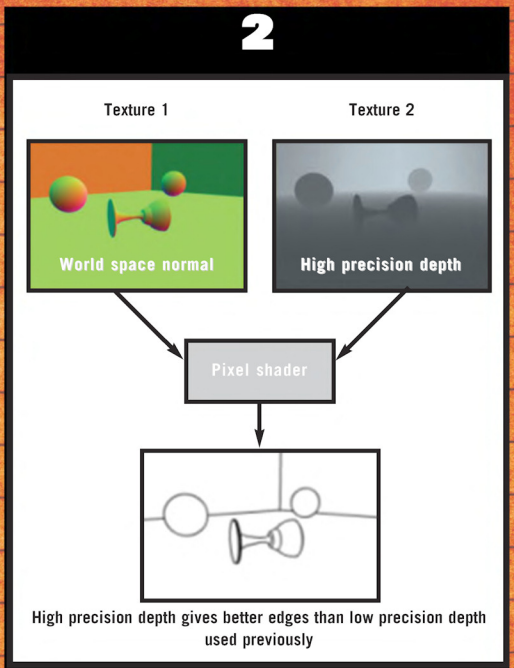
few years ago. The programming language for HLSL and Renderman are both C-like; shading precision is now on par – what other gaps are there to fill?

Our programmable hardware is now at the stage where it can render 'preview' CGI quality very fast. This is immensely useful for the CGI director when doing quick evaluations and changes for lighting and placement.

Instead of waiting 30 minutes for a frame to be rendered in software by a CPU farm, an approximation using OpenGL shaders, powered by gaming hardware, will draw it in seconds. We are also at the stage where we can render near-CGI quality TV productions at reasonable speed. The director of *Final Fantasy* says perhaps one minute a frame for cheap TV productions. John Carmack is expecting this type of commercialisation before the end of the year.



ABOVE: Just using two render targets, an effective 'depth of field' camera effect is achieved by the pixel shader. This is a typical example of how programmable shaders have replaced hardwired solutions, namely the accumulation buffer (eg. T-Buffer).



ABOVE: A higher precision output can be combined with the original in the pixel shader using multiple render targets to produce more accurate renderings. MRT is also useful for optimising non-photorealistic rendering used to achieve effects like cartoon or cell-shaded graphics.

Despite how close we are, there are certain things that will be out of our reach for a while to come. Only recently, with the release of Renderman 11, have true global illumination and ray tracing been added. Such unimaginable tasks aside, even things like higher ordered surfaces will have a hard time being realised today without artefacts. Although the hardware support for HOS is there, implementation is a nightmare. Pixel cracks when joining curves is one of the major problems. The only reason Renderman can avoid this is because it's rendered at the sub-pixel level. Don't expect that in consumer 3D yet.

Despite all the challenges ahead, we are truly nearing a decisive point in 3D graphics. It is interesting to note that while Renderman has gone through enormous changes, its core code base has remained intact for over a decade. The same fundamental architecture used in its first film, Luxo Jr. also drives the visuals in *Lord of the Rings*.

We may well be at that point in realtime 3D graphics: if the decisions on the HLSL specifications are nailed down right the first time, then this architecture may very well stay with us for a long time to come. Incremental improvements will always occur but the programmer will no longer need to play a non-stop game of catch-up. It may be this iteration, it may be the next, but at any rate we are finally at a stage where features are unified through shaders and programmers can look forward to writing code that is hardware-independent.

We'll end with a quote from Carmack: 'For the record, my next engine, the one after Doom, will be written in a higher-level shading language.'

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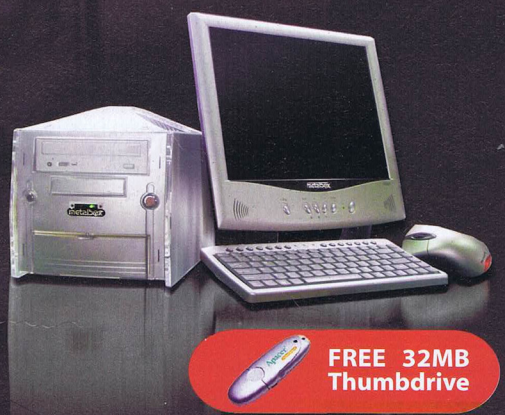

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THE ROAD TO ROM: A BRIEF HISTORY OF MULTIMEDIA

TAP TOGETHER YOUR RUBY SLIPPERS (INBUILT WATCH INCLUDED) AND TAKE A WALK DOWN THE YELLOW BRICK ROAD WITH TY PENDLEBURY.

August 24, 1995. Windows 95 is released with a level of publicity not seen from a computing product since the Macintosh was introduced at the 1984 Superbowl. Win95 was the first real step towards a true convergence of medias, and helped popularise the much-maligned term 'multimedia'.

Multimedia, or convergence as it's also known, is the combination of computers and telecommunication devices into a user-controlled medium. Ever since the invention of the transistor, electronic devices have been appearing in almost everything – from beds with clock-radios built in, to, well, pens with clock-radios built in.

The world of the electronic Swiss Army Knife is here. Why have a gadget that only does one thing, when with a device like the new Sony CLIÉ PDA you can take pictures, do your taxes, listen to MP3s and write emails?

Many convergent technologies up until this point seem to suffer from the 'jack-of-all-trades, master of none' syndrome. Sure, you can buy a fridge nowadays that connects to the internet – but why would you want to? It becomes a matter of quality versus convenience.

In most cases, a device designed to do a singular task will perform it much better than one designed to do several.

Where does this leave the PC?

THE EVOLUTION OF THE CONSOLE

The PC and multimedia owe a huge debt not only to television, but also to the humble gaming console. It all began in May 1972, and though the Atari overshadows its importance, the Magnavox Odyssey Home Entertainment System was the world's first gaming console. It allowed you to play video games at home six years before Space Invaders had even been conceived of.

The unit didn't have a CPU or memory, but was based on an analog system of discrete logic circuits. Similar to today's consoles, it used cartridges to store games: only these carts contained daughterboards, which altered the circuitry of the Odyssey. Stickers placed on the television delineated the playing area.

After the Odyssey came Home-Pong, the Atari, the Vic 20, the Commodore 64, and the Amiga. All were increasingly complex multimedia devices designed to be connected to your television, and to be easy-to-use. The Atari was the last device of its kind, as PCs began to take off due to their modular, non-proprietary nature. The computer/TV combination gave way at last to the pure gaming console.

And right now, the console market is booming, with relative newcomer Sony, and its PlayStation 2 decimating the opposition before it. Long term player Nintendo holds the lead over newest entrant Microsoft, with the GameCube outselling the Xbox – in Japan at least. Nintendo has been able to fend off attacks in its core market from less experienced contenders due to its insistence on creating a games machine rather than an all-in-one entertainment system. Xbox might be fun, but how many PC users would want one?

Sony currently offers the Linux for PlayStation 2 kit. At $499, it's claimed by Sony to allow you to 'utilise the PlayStation®2 console as a fully-functional desktop computer'. It includes an Ethernet adaptor; 40GB HDD; USB keyboard and mouse and a 'Monitor Cable Adaptor'. Meanwhile, the Xbox has also been (unofficially) hacked to allow users to run Linux on it.

Consoles have come full circle: they began life as home entertainment systems, became computers in the 1980s, went back to simple games consoles, and are once more becoming computers and gaming consoles.

'FRIDGE, THIS IS WASHER. DO YOU COPY? OVER.'

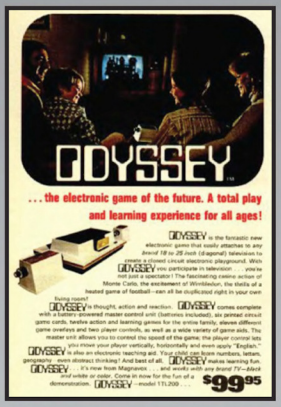
Home automation has been a dream for many people, but until recently, not very achievable for those without bank balances in the googles. Almost every electronics manufacturer is currently pushing its own brand of 'home networking', which will allow your toaster to speak with your stereo and so on.

The most infamous example of this strategy at work is LG's Internet refrigerator: the GR-D267DTU. It's a poorly spec'd machine with a 300MHz CPU; 128MB of RAM; 17GB hard drive; 15.1in LCD touch-

ABOVE: Bill Gates with his company's latest inventions: 'smart' alarm clocks, fridge magnets, wrist computers and key chains.

ABOVE: Windows XP Media Center Edition uses a simplified interface allowing it to be used on a television.

ABOVE: Inventor Thomas Edison, with one of the first electronic convergence devices: the Telescribe.



ABOVE: The Magnavox Odyssey was the world's first gaming console.

screen; as well as a built-in Webcam, microphone and speakers. But for $15,000, you'd want a Cray supercomputer built into Walt Disney's personal cryogenic unit!

Apart from the occasional kitchen teleconference, it doesn't do very much on its own. It's designed to act as a central hub for connecting LG's other devices: microwaves, air-conditioners, and washing machines. It seems even the little man in the fridge has finally lost his job to progress.

The trend for automating inanimate objects continues, with Bill Gates announcing 'smart' devices at November 2002's COMDEX show. Thanks to our old pal Billy, we can now surf the Internet with our pens, and check sporting results with our fridge magnets!

Microsoft's Smart Personal Objects Technology (SPOT) is designed to enhance the capabilities of the object rather than create an all-in-one device. As such, it goes against the current convergence trend. SPOT comprises a receiver (presumably using an RF-based protocol such as Bluetooth), and a centralised server, which services an array of gadgets with Web-based information like sports scores and Greenwich Mean Time. Microsoft is expected to make further announcements about the technology as you read this.

In other parts of the house, the future of entertainment seems to be going hard disk drive, with products such as TIVO's Digital Video Recorder and Imerge's MP3-based Soundserver. With DVD recorders becoming cheaper by the day, the HDD video recorder is the only real competitor. The two formats have similar features: 'time-shifting', the ability to record while watching an earlier part of the program; search functions; and the ability to record in a hi-res format – unlike VCR. The main difference between the formats being the portability of the media, and the fact that you can edit programs recorded on a hard disk drive.

If you have a spare $40,000+ to throw around for a hard disk music server, then you can't go past the Linn Knekt Kivor. It looks suspiciously like a PC in hi-fi clothing, with serial and USB ports, as well as a monitor connector. Sadly, these are for technician-use only, but no doubt millionaire hackers (a contradiction in terms?) could get the thing to work as a normal PC. You'd be better off buying the real thing, really.

Then there are products such as the Onkyo Net-Tune TX-NR900 receiver which has an Ethernet port for connecting to a PC. It uses a proprietary software player that allows you to listen to MP3s and Net radio without connecting a billion leads, and is also handy if your computer lives in another room.

THE HUMBLE PC

As more and more devices start to mimic stunted PCs, the PC itself engulfs more and more tasks traditionally done by custom-made components. Almost every professional environment now uses computers for some or all of its tasks, and similarly a large proportion of home entertainment involves electronic devices of some sort. Therefore it makes sense to roll it all into one unit.

The PC is perhaps the ultimate convergence device: it is almost infinitely configurable and upgradeable and able to do dozens of different tasks well.

It also has a built-in clock. Way hey!

Audiophiles and PC enthusiasts have similar aims: to tweak their systems to give the

History of multimedia

Multimedia is a 20th century invention, and is the culmination of several different inventions of the last 100 years. With several exceptions, the PC/convergence device owes its existence to these important landmarks:

- In 1876, Alexander Graham Bell invented the telephone.
- In 1897, the first cathode ray tube (CRT) scanning device was invented by German scientist Karl Ferdinand Braun.
- 1921. Thomas Edison invents the Telescribe. Not only did Edison also invent the light bulb and phonograph, but the Telescribe was possibly the first ever multimedia device. It combined the phonograph and the telephone into a dictation device.
- 1927. The Jazz Singer becomes the first 'talkie' moving picture.
- In 1951 29-year-old technician Ralph Baer was asked to create 'the best television in the world' and invented the idea of the computer game. His ideas didn't take shape until 1966 when he wrote a four-page outline of how it would work. He sold the invention six years later to games company Magnavox.
- In 1952, S. Douglas of Cambridge University designed the first computer game, based on Tic-Tac-Toe, using a modified cathode ray tube for his thesis on computer interactivity.
- In 1957, the year the Soviets launched Sputnik, the US formed the Advanced Research Projects Agency, which ten years later would design the first incarnation of the World Wide Web: the ARPANET.
- In 1961 the first commercially available integrated circuits were made available by the Fairchild Semiconductor Corporation. The IC was simultaneously invented by Jack Kilby and Robert Noyce, and would form the backbone of all electronic devices from the early 1970s and onwards.
- In 1963, the concept for LCD was formulated, and helped spawn one of the first digital crazes – clocks in everything! While in the 1970s, LCD watches competed with the LED variety, in the 1980s, pens, fridge magnets – you name it – had an integrated LCD clock.
- In 1971, Seiko's digital watch, the 'Wrist Computer', is credited as being the first consumer product to contain microchips. It contained 44 ICs, but the LED display was a huge drain on the battery power: you had to press a button to display the time.
- 1999. US Vice President Al Gore invented the Internet. Apparently.

maximum possible performance. It makes sense, therefore, to combine the two pursuits: home entertainment and. . . er. . . tooling about on the computer. It's time for the PC to break its bonds and venture out of the bedroom!

PC home entertainment got a shot in the arm with the invention of the sound card. In 1989, Creative released the Sound Blaster, based on its first device: the Creative Music System. Multimedia capability had finally come to the PC. The card offered an 11-voice FM synthesiser and 8-bit mono playback.

At this point, the Macintosh had offered stereo sound for at least two years: PCs were playing catch-up with Macs.

The PC has always struggled to garner any sort of multimedia credibility, and it's a stigma that still persists. Many graphic designers and musicians swear black and blue that the Mac OS is superior to Windows for graphics and music.

Home theater PCs (HTPCs) weren't a real possibility, however, until DVD-ROMs became widely available in the late 1990s. At the time, most standalone DVD players were upwards of $500, and the ability to watch a DVD on the computer, and also connect the TV up via video-out started a small revolution. No longer would you have to pay thousands and thousands for a home theater set-up. You could add a DVD player to your existing PC and away you went!

Of course, anyone can make their own (HTPC), and the quality of components is increasingly competitive with high-end hi-fi. Up to ten years ago, PCs were an RF nightmare, and consumer sound cards struggled to produce anything resembling coherent noise. But since the release of cards such as Creative's Audigy series, 100dB noise floors – a hi-fi standard – had finally become achievable.

Further to this, companies such as Zalman produce near-silent fans and power supplies, defying the overclocker's maxim that the louder it is the better its performance. Products like the CNPS6000-Cu cooler ensure we can watch DVDs in relative peace or even have our computers on while we sleep.

An important consideration when contemplating a PC in your lounge room is aesthetics. Thankfully, after years of complaints by PC owners, the beige case is on its way out. In its place are dozens of beautiful cases which you could use without shame as part of your stereo system. Some even have the little isolating feet that stereo components have. Nice.

HTPC INTERFACES

Due to the relatively low 640 x 480 resolution of PAL TVs, viewing a desktop on TV is a relatively painful experience. As a result, several modified GUIs are available. These include the Digital Theater 1.5, Media-Box and several different skins for Talisman. The best of these is probably Media-Box, which also includes its own media player. None of them work straight out of the box, which wouldn't appeal to newbies, but are fairly tweakable.

Latching on to this good idea is Microsoft. It has previously ventured into home integration area, having released WebTV with Windows 95, and then Ultimate TV set-top boxes early 2002, which all but disappeared.

Hewlett-Packard has released several different PCs designed to be hooked up to a television, and will marry television programming, personal video recording, music, movies, DVDs and pictures on a single device. The OS, Windows XP Media Centre Edition, offers a customised interface, with shortcuts to common home entertainment tasks, and is operated from a remote control. WinXP MCE is not a solution for power users, obviously, but is indicative of the burgeoning market for convergence technology.

Media Centre Edition (MCE) is actually a by-product of the antitrust case decision. The US Department of Justice ruled Microsoft offer PC makers a customisable version of Windows. This is also perhaps why it is not offering MCE as a standalone OS. There is, as yet, no release date for these PCs in Australia.

THE FUTURE OF MULTIMEDIA

In the seven years since the release of Windows 95, multimedia has come a long way. Not only due to the superiority of WinXP but also to other inventions such as GPRS for mobiles and affordable LCD technology. But what of the future?

DVD/HDD recorders such as Panasonic's DMR-HS2 will eventually help the long overdue retirement of cassette, but it's a standalone device and only comes with a 40GB HDD. Sony's new CoCoon is similar, but it comes with a 160GB drive – and no DVD.

Meanwhile, a promising newcomer looks to eclipse both technologies. Blu-Ray is a recordable disc that can hold up to 54GB of data, in comparison to DVD's limit of 4.7 gigabytes. It is set to revolutionise the multimedia industry: the ability to back up whole hard drives on one disc is a very promising one.

Of course, current machines are so large that they make *Hitchhiker's* Deep Thought seem pocket-size.

Despite the predictions of doomsayers, there is no clear winner in this technology race. PCs are becoming increasingly competitive, but will never be able to encompass everything. There will always be a need for standalone hi-fi systems, and cameras that just take photographs. Then where does that leave the SPOTs and the all-in-one PDAs of this world? Only the market can decide.

ABOVE: The Onkyo TX-NR900 is one of a new breed of stereo components featuring Ethernet ports, which can be used for media streaming.

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AGDC 2002

We came, we saw, and Bennett Ring got really, really drunk.

You might be surprised to hear that games aren't created by a group of mystical AI algorithms deep in a massive subterranean cavern below Silicon Valley. There are actually real life human beings toiling away for years at a time in darkened rooms to bring you games you can play your life away with, and we even have our own bunch of these special people in Australia.

The Australian Game Developers Conference, held at the Melbourne Conference Centre over three days in the middle of December, is an annual event where Australia's game developers get together to steal each others ideas, plant crappy game concepts in the minds of other developers, and get totally trashed. So it was obvious that *Atomic* just had to be there.

It's actually a little more serious than we've made out, with the meat of the conference being a stack of different symposiums, presented by some of the biggest names in the industry, as well as some of Australia's most talented game developers and researchers.

There were four main streams of lectures: Art & Development; Platform Specific; General Design; and Business Development. Here's a brief rundown of what each stream covered:

Art & development

- Learning AI in games
- PS2 character animation
- 3ds max 5: features for game developers
- 3ds max 5 and the production pipeline
- Techniques for realtime cinematic effects
- Xbox graphics upgrades
- Inside Xbox Live
- Texturing for the Doom generation
- The art of directing/creating cinematics

Platform specific

- Intel Hyper-Threading
- PS2 programming optimisations
- PS2 clipping and culling
- Joining Xbox
- The Xbox audio difference
- PS2 for PC programmers
- PS2 performance analyser
- Introduction to PS2 online gaming
- Game development using the PS2 Linux kit

General design

- Merging physical and virtual into gaming
- Creating console games with Aussie content for the international market
- Game designing with Maya
- Engine design for multiple platforms
- Tales from the frontline of game design
- Audio roundtable
- Simulation, emulation and design process
- General design roundtable

Business development

- Help to commercialise new products and finance your R&D
- Auran's collaboration with Creative Design
- Lessons learnt in the game industry
- The business of being a start-up
- Massive multiplayer games – fast track or train wreck?
- Legal issues affecting the industry
- Save the platypus – student game project
- Issues for independent developers
- The role of a producer in a games studio

OK, so maybe that list wasn't quite as brief as we'd first thought. Presenting these lectures were a mixture of Aussie and international game developers, as well as representatives from some of the big companies who supply the tools to game developers. Presenters of note included the god-like Dr Ray Muzyka, CEO of Bioware, who gave the audience a run down of the development process for NeverWinter Nights from start to finish. Laura Fryer, Director of Microsoft's Xbox Advanced Technology Group, also flew in from the States with assorted other Xbox gurus, to help drum up support for the Xbox. Also present was Doug Church, of Ion Storm fame, who was the presenter of the 'Simulation, emulation and the Game development process' lecture.

As we're all mad fans of BF1942 at *Atomic*, we simply had to get some one-on-one time with Lars Gustavsson, one of the lead designers of this amazing game – check out the interview on the *page 40* to see what goes on inside the head of this very talented individual. There were a stack of other companies and presenters of note – apologies to those we couldn't fit in.

Looking like a clone of Drew Carey was the whacky German Steffan P. Walz, who presented one of the most enjoyable lectures of the weekend, discussing his 'hybrid reality' game, M.A.D. Countdown. This game used a real life building and networked Pocket PCs to create a game that blurred the line between reality and virtual, but we just liked his funny accent.

The 'Inside Xbox Live' presentation was one of the most anticipated talks – finally Australians would get to see Xbox Live in action! Or so we thought. Unfortunately, when the presenter Peter Isensee tried to join a game of Moto GP online, he had to wait so long for the next race to start that he ended up running out of time, meaning we didn't actually get to see any racing in action. And of course there was absolutely no mention of the service getting launched in Australia, so don't expect to use your Xbox Ethernet port anytime soon.

While we appreciated most of the lectures that we attended, there was a common complaint among some of the attendees. Due to many of the presenters being from companies that sell tools or gaming platforms, such as the Xbox and Sony reps, a lot of the lectures ended up feeling like a 60-minute advertisement for their respective products. And when you're paying around $900 to attend a game development conference, you don't want to hear about how good something is with absolutely lightweight technical details.

Other than this complaint, the conference seemed to go off without a hitch. As well as the lectures, a small expo had a limited number of vendors displaying their wares. Easily the highlight of this was the NVIDIA stand, thanks to the presence of three machines equipped with GeForce FX video cards. We managed to spend a good couple of hours checking out the new tech demos for this card, and boy does the NVIDIA fairy chick look hot in real life. We can't wait until someone figures out how to get rid of her skimpy costume. We tried to run a quick 3DMark2001SE Pro benchmark, but were told we'd be sent into the centre of the sun if we attempted this.

Steve Burke, one of the lead 3D designers at NVIDIA, was kind enough to take us over to the Discreet stand to give us a basic tutorial on his methods of 3D modelling, which was a real eye opener to say the least. Forget the thousands of complicated tools that ship with 3ds max 5 – extruding and bevelling basic cylinder shapes is the way to go.

Sign on the dotted line

Australia also has a burgeoning amateur game development scene, and this was shown off in the Best Unsigned Game competition. This competition was to discover the best game being developed in Australia that hasn't yet been signed up by a

ABOVE: The place to be – the Atomic stand.

ABOVE: All HAIL amateur game developers!

ABOVE: Melodie Mars – the unsigned comp winner.

publisher, and showed off the talents (or, in some cases, tragic lack) of some of our amateur game developers. The following titles were on display:

HAIL

A third person melee game set during the age of the gladiators, this was easily the most polished unsigned game at the show. This was probably because it was developed by the most experienced and largest team there, comprised of students from the Diploma 2 of Advanced Computer Game Development course at the Academy of Interactive Entertainment. Considering they'd only had around nine months to develop this game, with a very limited budget, the demo of HAIL was even more impressive.

Space Battle

In the words of the developer, this is 'a multiplayer space combat game, fast-action-paced, made especially for LAN gaming'. Unfortunately this was one of the games that we didn't manage to catch in action.

Pax Galactica

A 'broad-view, space-opera game', this game follows in the footsteps of the Alpha Centauri. Programmed almost entirely in Visual Basic, the feature list for this ambitious title is massive, and involves dominating a galaxy of 200 stars, each of which goes through the full life cycle of a star, from its bright birth to a fiery death.

Pyzzle

The only Open Source game on show, Pyzzle is set firmly in the mold of the Myst series. In other words, it has lots of pre-rendered images and puzzle solving.

While the idea doesn't really appeal to us, the success of Myst and Riven shows that this genre has a huge audience.

Idle Time

Developed by only three self-trained guys, this car racing game had three playable tracks and a pretty sweet looking graphics engine, especially considering the lack of experience the team had.

Gargarin

Think Tomb Raider but with a heavy Asian influence. We say Asian influence, as where else would you find a game with level names such as Joy, Angry, Grief and Happiness.

Tito the Bouncing Alien

We hope this is only a working title! A very cool looking game, it obviously benefited from the amazing artistic talents of the developers, and was one of our favourites.

And finally, the winner of the unsigned game competition:

Melodie Mars

Cross the PS2 games Rez and Parrappa the Rapper, throw in a dash of LAN multiplayer action, some hardcore techno, and finish it all off with the biggest tab of LSD you can find, and you still won't understand what the hell this game is all about. Easily the most visually impressive game on show (although HAIL was close behind), we sat down for ten minutes with the developers and still didn't have a clue what to do. The judges must have liked it though, as this game took out the winner of this fierce competition.

That's LANtastic

As well as the conference side of the show, a 400-player LAN was run over the Saturday and Sunday and, as per bloody usual, Counter-Strike was the game of choice. It was great to see that BF1942 is also taking off as a LAN game, but the large team numbers required makes running a BF1942 tournament somewhat trickier than any other multiplayer game.

It wouldn't be an AGDC without heaps of booze-laden parties, and this year's AGDC didn't disappoint. The Micro Forte party onboard the Poly Woodside ship was a highlight, if only for the various ways attendees managed to manipulate the 'card for drink' system. One of the few things we can remember is hanging out with a bunch of Queensland Government IT workers, and it must be said that these guys know how to drink.

The infamous Nerf Gun party was sponsored by Universal Interactive, and it wasn't so bad. The only downer was that the distribution of weaponry wasn't exactly fair, with the big wigs getting high powered uber rifles, while us mere mortals had to make do with pistols.

My head hurts

Judging by the massive collective hangover and the distribution of pale faced, red-eyed developers at the end of the conference, most of the attendees had a rocking good time while managing to pretend they were there to further their careers.

While some of the lectures were light on juicy details, there's no doubt this year's AGDC was a great chance for the Aussie developer community to network, and resulting in a more unified approach to promoting our home grown talent.

There is something seriously wrong in the LANing world. The sound of bullets rips through the air, the ominous shouts of gamers assault the senses and a man with a neatly trimmed moustache and brief case strides by on his way to a cocktail party.

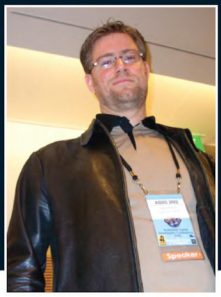
Yes, the AGDC LANfest is a mix of the scraggly gamer and the corporate honcho, with a little touch of suave marketer thrown in to tip the balance in the favour of gamers. While the conference raged on next door, the virtual battlefields of LANfest livened up with some of the most intense matches in recent LAN competition.

The Ausgamers-powered network provided its usual silky smooth performance, the wide variety of competition and public server springing up constantly being dealt with easily by the portable server farm of the Ausgamers team. The usual assortment of competitions were run: CS, Q3, Warcraft 3 and NS with newcomer Battlefield1942 showing renewed appeal after hefty server and client side patching.

Cheating reared its evil head in the form of renewed critisism of 'netcoding', a process by which the server updates information to the client faster through customised settings in Half-Life resulting in seeing your enemy first. Servers were quickly patched and the comps got underway. With NVIDIA and Creative chucking in Ti-4600s and MP3 players, the comp was fierce. Four hundred gamers showed the world (and game developers) they are indeed the future entertainment market of the new millenium. Now all I need is that NV30 on display. . .
Stuart Denham

Battlefield 1942 Q&A with Lars Gustavsson – Lead Designer, DICE

BF1942 is proving to be a favourite in the *Atomic* war room, especially since the 1.2 patch fixed the dodgy netcode. We caught up with the lead designer, Lars Gustavsson, at the AGDC expo and subjected him to a Nazi-style interrogation, complete with electrified nipple clamps. Here's what he had to say in between bouts of screaming for his momma:



Q. Are you happy with the state of the netcode since the 1.2 patch, and why does BF1942 chew through so much bandwidth?
A. Yes I am happy with the new patch, as we covered a lot of ground. Especially we cleaned up network performance and lag issues: we had some mismatch between the client and server, which was mostly visible at close range. We fixed that now, so you can shoot people up close without wasting a full clip.

It uses a lot of bandwidth due to the vehicle physics; for example when a tank tumbles down a hill it requires a lot of bandwidth to keep the clients updated as to the position of the vehicle. Our multiplayer demo was pretty late, so we didn't realize these problems quite early enough for the launch. We're working now on using prediction so that the client side can handle the physics of vehicles without having to use bandwidth for this.

Q. What is your response to people who say that BF1942 glorifies war and makes the serious issue of people dying enjoyable? We love the game, but feel a little guilty enjoying it so much?
A. This was very tricky. We tried to make each of the teams neutral, in that we didn't make the Americans better than the Japanese, or the British and Russians better than the Germans.

We avoided depicting one team as the bad guys and the other as the good guys – all are depicted very neutrally.

We talked to people from each of the countries, and they had no hard feelings, so we didn't feel as if we were rekindling old angers. We've gone out of our way not to offend people, such as removing the Swastika symbol from the German teams.

We left gore out of the game as EA wanted it to have a teen rating, so there are no blood effects. Which is kind of strange – you're allowed to have a soldier fall realistically to his knees after getting shot in the head, but you can't have spraying blood.

Q. Do you mind people using blood mods?
A. Personally, I don't see the need, especially with the new hit indicator in the 1.2 patch. But I don't mind if they do it.

Q. What did you have to leave out of BF1942 that you would have liked to include? Did you ever toy with including voice comms?
A. Due to the bandwidth usage, we decided not to implement voice comms. But in general we feel that we didn't really leave out much from what we'd planned.

Although there are a couple of things that would have been nice, such as knowing when your vehicle is approaching a friendly mine, as well as destructible buildings, which everyone would have loved to see. Unfortunately the performance hit incurred to implement destructible buildings was too high, especially in single player, as the AI would need to figure out if they were in a destroyed building. It also required more bandwidth to keep all the clients updated in the multiplayer mode. We would also have liked animations for people entering vehicles, but getting shot while doing this was problematic. There are many other things we would have liked to implement, but we're happy with what we managed to squeeze in.

Q. How difficult was it to implement vehicles?
A. We had done them in Codename Eagle, so we knew that it worked, but at the same time we wanted a slightly different touch to BF1942. It wasn't one of the biggest challenges we faced when developing BF1942, but getting the right feel was quite hard.

Q. How come you left out motorcycles – we want them! Any plans to reintroduce them?
A. Me too! I can't say if they'll be back, but I want them as they're great for stealing the flag in CTF games.

Q. BF1942 is going to be ported to Xbox – will this port present any unique problems?
A. Battlefield is really chewing up memory for textures, so it has been hard work getting it onto the Xbox. But we have great experience with Rallisport Challenge, so we're applying that knowledge to the port.

Q. What is going to be in the expansion pack other than new models and maps? Any new features?
A. It's mostly content, and it really shows how the team has grown from BF1942, especially in the level design.

We've had time to find out what works and what doesn't, and are of course making levels that focus on what works!

Q. What is your favourite level in the game?
A. Omaha Beach – the challenge of attacking is amazing. I'm also a big fan of Stalingrad, and Wake in CTF mode is really hilarious. When we were developing the game, we'd deliver a build at 3am and tell the guys to go home. But they'd stick around for another three hours playing CTF Wake, it's that good.

Q. Any plans for a Linux client for BF1942?
A. Not at this point but I won't say that it's never going to happen.

Q. Where are you guys headed now – what can we expect to see next?
A. We're about to start digging in and talking with EA about some new ideas. Can't say much more really.

Q. Any chance of a Battlefield update set in the 1980s or 1990s with modern weaponry?
A. It's not impossible. We will see what EA has to say. . . and I'm sure you understand that we can't really discuss what we might be doing in future.

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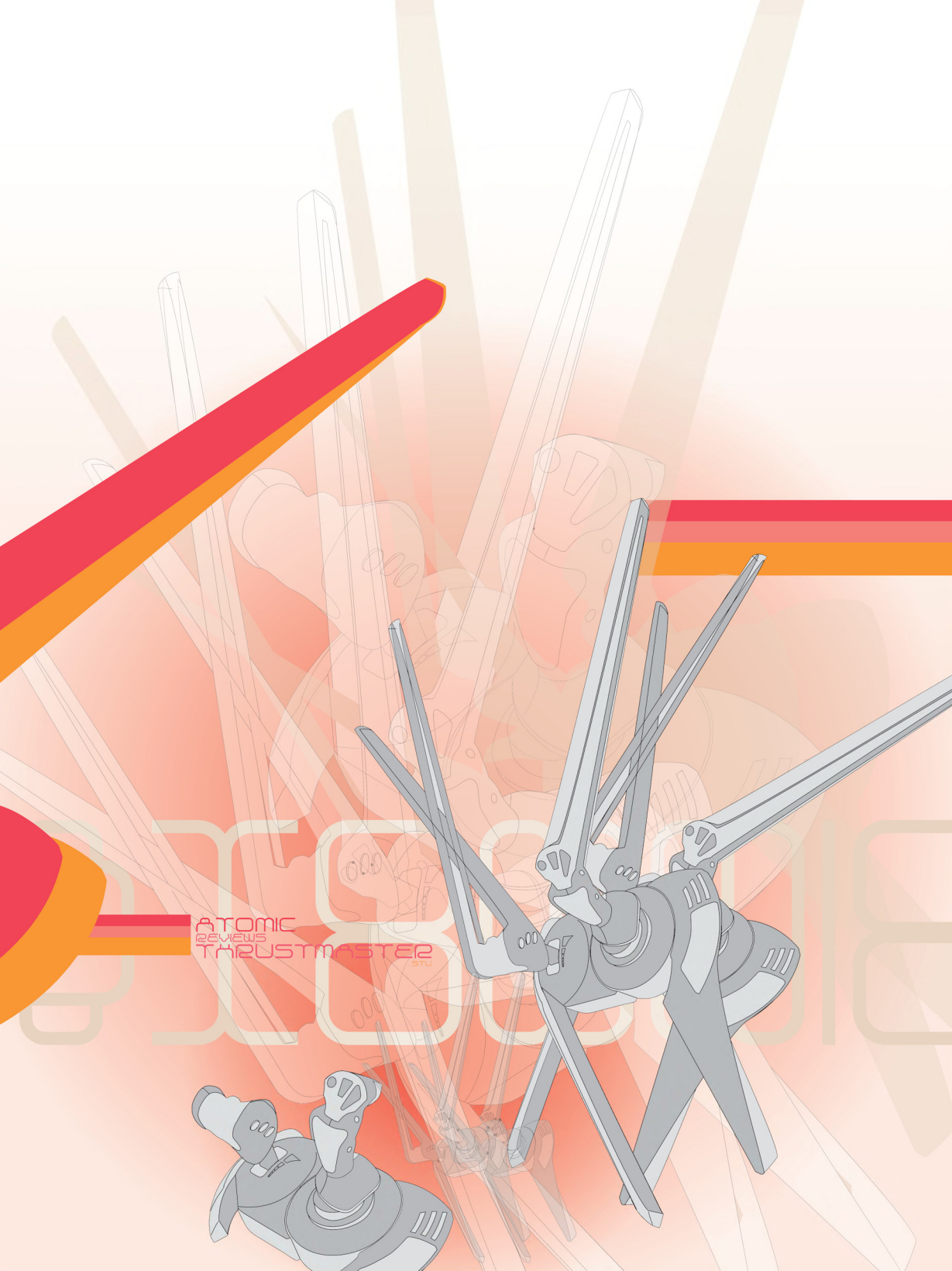
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RAGE against the machine

ATI has come a long way since the days of RAGE, and John Gillooly reckons you are cheating yourself if you avoid ATI because of long dead problems.

Remember those exciting days, where 3dfx and NVIDIA duked it out on a regular basis at top of the 3D charts. Those were also the days when ATI fell firmly into the same class of manufacturer as S3. It made bucketloads of money in the mainstream but could never cut it with its RAGE chips in the performance sphere.

How things change. ATI made an amazingly smart decision back in 2000. It purchased graphics chip developer ArtX, whose influence on ATI began with the GameCube's Flipper chip and culminated in the RADEON range of cards.

Much like NVIDIA's army of ex-3dfx engineers who worked their butts off on the new GeForceFX architecure, ArtX's team went to work on a line of performance 3D products set to culminate with the NVIDIA-killing RADEON 9700 PRO. This was coupled with a major shift in ATI's corporate philosophy from card to chip manufacturer for third-party card manufacturers.

No one would argue this was anything but a success, even though the relationship with the R300 core is more marketing than manufacturing based. Currently all the RADEON 9500 and 9700 series cards on the market are made in China by Sapphire. These cards are then paired with the manufacturer's choice of heatsink and packaging then launched into the outside world. The reasoning behind this is that most card manufacturers don't have the capability to make the complex eight-layer PCBs needed for the RADEON 9700's 256-bit memory bus. Right now the only company working on a new card design is Tyan, and we should see what it can do in the next month or so.

Overall the RADEON 9700 PRO is an amazing achievement and a great option to overhaul your gaming performance. But we still hear a lot of feedback that many are scared to take the ATI plunge, and those people are missing thanks to some misguided thinking and early misinformation.

I doubt anyone would dispute that the RADEON 8500 was plagued by controversy and poor drivers. Games had major issues, performance was poor and the GeForce3 wiped the floor with it on launch.

Over the lifespan of the RADEON 8500, ATI finally started getting the driver thing right, to the point that the card is now delivering much greater performance than it initially did as well as proving to be a serious contender for best budget card available with a sub-$200 price tag. In order to reduce confusion, the RADEON 8500 will be rebadged as the RADEON 9100 as it still has a fruitful life ahead.

But the RADEON 9700 was always going to be ATI's make or break chip. As a preface to the release ATI announced the creation of a set of NVIDIA-style unified drivers known as Catalyst. These drivers are still undergoing a trial by fire, and while it makes ATI's drivers a much more solid option, there is still work to be done to stop the need to install separate drivers and control panel software.

Catalyst marked a turning point for ATI. It signified a new commitment to driver quality, a new era of bug squishing and a revolution in software compatibility, for ATI at least. Perhaps the best case study of this philosophy is the story of the RADEON 9700 PRO release.

When ATI finally decided it was time to launch the RADEON 9700 PRO, it faced one immediate problem that could have crippled the chances of the card. It was the first hardware designed for Microsoft's significantly revamped DirectX 9 API, and it looked like the actuall API wouldn't be released until the end of 2002.

But the opportunity to launch the card well before Christmas and steal some of the wind from NVIDIA's sails meant that ATI persisted, launching with DirectX 8 drivers. In the first week of launch there were three major game releases that had problems with the RADEON 9700 PRO. Complaints were made but within a few days ATI had a fix available for download on the Website and squashed the bugs completely a week later with new drivers.

There were also reports of some cards having major compatibility issues with AGP 8x motherboards. This was tracked down to a problem plaguing early PCB revisions of the RADEON 9700 PRO and certain brands of motherboard, and it never affected more than a handful of cards on the market.

Since then there have been some public complaints about drivers, the most notorious (and funniest) was flame bait maestro Dr Derek Smart PhD, creator of the Battlecruiser games and the last of the great solo developers. Derek, already famous for some of the longest and most pointless flame action the Web has ever seen, had issues with ATI drivers that he translated into indications that ATI's drivers blew ungulates.

He posted his complaints on the Beyond3D message boards. Derek was flamed, he bit back, everyone laughed and within mere hours members of ATI's development team were on the boards both refuting accusations and offering to help him work around his problems.

The team has been so amazingly proactive and I think all of us at *Atomic* HQ would agree that there have been more problems caused by hardware sound issues with one of the more popular brands of audio cards, than issues with the RADEON 9700 PRO.

So why come out with such an ATI positive rant? Well from the reports we receive of people being wary of moving to a RADEON 9700 PRO or any other ATI card we though there needed to be some clarification. Forget the past – if you want the fastest in 3D, then the RADEON 9700 PRO is hands down the best option, and as the past few months have shown it is both incredibly stable and very compatible with the absolute cutting edge of gaming.

Atomic benchmarks

At *Atomic*, it is our primary intention to give you the final word on the latest in hardware and PC technology. An integral part of determining the performance of a particular piece of hardware is benchmarking, and this is something that we take very seriously in the *Atomic* Labs.

SYSmark2002

SYSmark2002 is a product of the collaboration between industry group BAPCo (www.bapco.com) and MadOnion.com (www.madonion.com). It is one of the next-generation application benchmarks and is designed to more accurately replicate the day-to-day workload that a system is subjected to. The focus of the benchmark is on Internet Content Creation and Office Productivity tasks, which combine to produce a final performance rating.

Unreal Tournament 2003

UT2K3 is the latest and greatest first person shooter from Epic. The game makes use of the new Unreal Warfare engine, and as such is a perfect benchmark for system performance. We use HardOCP's (www.hardocp.com) benchmarking utility to run a series of flyby benchmarks at varying resolutions to test performance. The utility also features support for a low resolution/high geometry CPU test. Results are in average frames per second.

3DMark2001SE Pro

3DMark2001SE Pro from MadOnion.com is the next progression of the popular benchmark utility. It also uses the MAX-FX engine and heavily emphasises DirectX 8.1 functions, including programmable shaders. The results are not comparable with results from 3DMark2000 Pro.

Serious Sam: SE

Serious Sam: The Second Encounter is used for testing OpenGL performance. For game tests we use the Cooperative demo, which outputs an average framerate trimmed of excessive peaks. It also contains a fillrate test, which outputs fillrates for various texturing methods and is useful for making comparisons between video chipsets.

HSF testing

To test heatsink fans, we use our Athlon XP test bed, which makes use of an internal temperature diode. SiSoft Sandra 2002 is run in looping burn-in mode, with both CPU tests selected for 30 minutes, after which the load temperature is recorded. The CPU is then left at rest for 30 minutes before the idle temperature is taken.

Quake 3: Arena *AtomicMPC* demo

Quake 3: Arena (Q3A), from id Software, is a very popular first person shooter, and represents widely used OpenGL gaming technology. Q3A has a built-in benchmarking utility and built-in demos that can test graphics card performance. These demos are fairly simplistic, so we developed our own *AtomicMPC* demo that pushes the hardware as far as possible.

Other benchmarks

Sometimes we need to break down the tests into more specific areas, such as hard disk performance, memory performance, or a particular facet of 3D, such as T&L. We can draw on a vast number of applications, games and dedicated benchmarks such as CD Speed 99, DisplayMate, Dronez, MDK2, or Adaptec ThreadMark to perform these tests. We also use a Lian Li temperature probe from Anyware (www.anyware.com.au) for tests that involve the measurement of temperatures, such as HDD heatsinks.

Atomic Hot Award

The *Atomic* HOT award is given only to the most kickarse products to hit the labs, ones that score 9 or greater. They're the ones we'd want, or simply the ones we want to make love to.

Atomic testbench specs

Both test systems use Windows XP Professional with Service Pack 1, DirectX 8.1 and the latest chipset and video drivers.

- **AMD Athlon XP 1800+ system – ASUS A7V266-E motherboard (supplied by CASSA:** www.cassa.com.au**)**
- **Intel Pentium 4 2GHz – ABIT BD7II-RAID motherboard (supplied by ABIT:** www.abit.com.tw**)**

Common components

- **Samsung 256MB PC2700 DDR-RAM (supplied by CASSA)**
- **Samsung 256MB PC800 RDRAM (supplied by CASSA)**
- **Hercules Prophet II GTS 32MB (supplied by Guillemot:** http://au.hercules.com**)**
- **64MB Apacer memory keys (supplied by Anyware:** www.anyware.com.au**)**
- **Hercules Prophet II GTS 32MB (Supplied by Guillemot:** www.hercules.com**)**
- **Sound Blaster Live! Player (Supplied by Creative Labs Australia:** www.creaf.com**)**
- **ASUS 52X CD-ROM (supplied by CASSA)**
- **Belkin PCI FireWire card (supplied by Belkin:** www.belkin.com.au**)**
- **Belkin PCI USB 2.0 card (supplied by Belkin)**

Benchmark settings

3DMark2001SE Pro

- **1,024x768; 16-bit colour; 16-bit textures; 16-bit Z-buffer; triple frame buffer.**
- **1,024x768; 32-bit colour; 32-bit textures; 24-bit Z-buffer; triple frame buffer.**
- **1,600x1,200; 16-bit colour; 16-bit textures; 16-bit Z-buffer; triple frame buffer.**
- **1,600x1,200; 32-bit colour; 32-bit textures; 24-bit Z-buffer; triple frame buffer.**

Quake 3: Arena *AtomicMPC* Demo

All tests use Quake 3: Arena 1.27g and our custom Q3A demo recorded by the *Atomic* staff.

- **CPU testing: 320x240; maximum geometry detail; minimum graphics settings; high sound quality.**
- **Graphics cards: Low quality – 1,024x768; normal quality graphics settings; sound disabled.**
- **Medium – 1,280x1,024; maximum graphics settings; with all game sound disabled.**
- **High – 1,600x1,200; maximum graphics settings; with all game sound disabled.**

Mainboard

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- IDE ATA/133/100
- C-Media 6 Channel Audio
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- VIA 10/100 LAN
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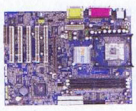

- Intel® Pentium® 4 Processor Support @ 533/400MHz FSB
- VIA P4X400 Chipset
- DDR333 SDRAM Support up to 3GB
- AGP 8X/4X
- 5 PCI, 1 CNR
- ATA/133/100
- VIA 6 Channel Audio
- VIA IEEE 1394 (Optional)
- 6 USB 2.0/1.1
- VIA 10/100 LAN
- Smart Card Reader Support

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- 6 USB 2.0/1.1,
- Smart Card Reader Support

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South Melbourne VIC 3205

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Ph 07 3852 5288
Fax 07 3852 5299
41 O'Connell Terrace
Bowen Hills QLD 4006

http://www.viatech.com

Framerate

What else can be said – it's all 9700 baby. We continue to wait patiently, and NVIDIA seems content to let our hopes and predictions ferment for another damnable month. Not that damnable thankfully, as 8500s and Ti4200s keep getting cheaper and cheaper. And cheaper.

Sapphire RADEON 9700 PRO

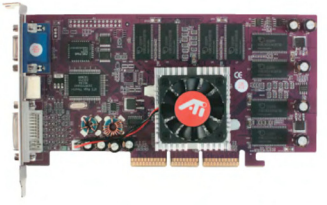
SPECIFICATIONS: ATI RADEON 9700 PRO; 128MB DDR-RAM; AGP 8x; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 325MHz **MEMORY SPEED:** 620MHz
WEBSITE: Sapphire www.sapphiretech.com
SUPPLIER: Achieva www.achieva.com.au
PRICE: $699

We looked at Sapphire's RADEON 9700 PRO a few months ago, but it is the first company to come out with a new PCB design intended to fix AGP 3.0 issues experienced with some motherboards. Plus it now comes in black, which is way cool.

Powercolor Evil Xabre400

SPECIFICATIONS: SiS Xabre400 chip; 64MB DDR-RAM; AGP 8x; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 250MHz **MEMORY SPEED:** 500MHz
WEBSITE: PowerColor www.powercolor.com.tw
SUPPLIER: Altech www.altech.com.au
PRICE: $149

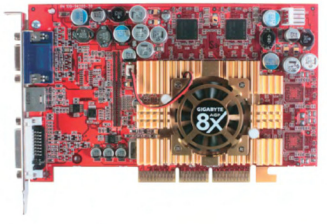
Normally the Xabre uses very low quality textures to enable high speed performance. We tested the card using a registry fix to enable quality textures and it impacts performance dramatically. The card is cheap, but there are definitely better options.



Daytona RADEON 8500LE

SPECIFICATIONS: ATI RADEON 8500LE; 64MB DDR-RAM; AGP 4x; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 250MHz **MEMORY SPEED:** 500MHz
WEBSITE: Palit www.palit.com.tw
SUPPLIER: Sato Technology www.satotech.com.au
PRICE: $168

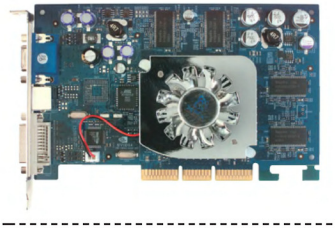
With all the focus shifted to ATI's RADEON 9x line, the 8500LE is oft forgotten about. However, for under $200 you can snap one of these suckers up and enjoy respectable speeds and full DirectX 8.1 compliance for next to nothing.



Gigabyte RADEON 9500

SPECIFICATIONS: ATI RADEON 9500; 128MB DDR-RAM; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 275MHz **MEMORY SPEED:** 540MHz
WEBSITE: Gigabyte www.gigabyte.com.tw
SUPPLIER: Synnex www.synnex.com.au
PRICE: $399

It's still new, but unfortunately the RADEON 9500 lags behind the competing GeForce4 Ti4200 line-up. Performance with the PRO model is much more respectable, rendering the regular 9500 to the decidedly average bin.



XFX GeForce4 Ti4200

SPECIFICATIONS: NVIDIA GeForce4 Ti4200; 64MB DDR-RAM; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 250MHz **MEMORY SPEED:** 500MHz
WEBSITE: XFX www.xfxgraphics.com
SUPPLIER: MMT www.mmt.com.au
PRICE: $359

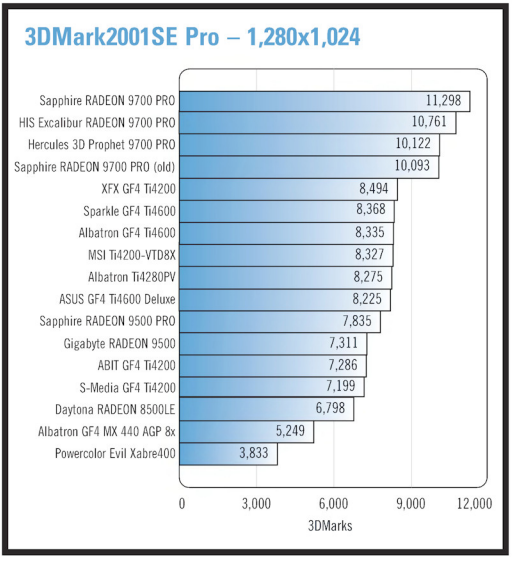
Pine has a name as a purveyor of cheap video cards, a reputation that gets it sales but not a huge amount of respect. Therefore it has launched XFX, the new performance range of cards to push itself into the high-end market with the GeForce4 Ti.

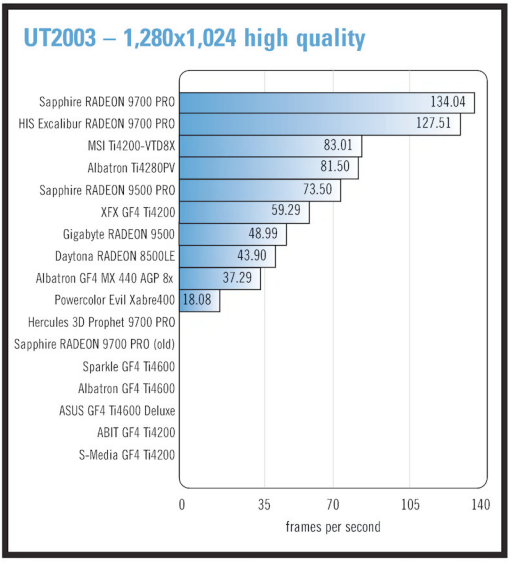
Video cards

And yet another month passes without anything really tangible released for the GeForce FX. While we now know about the potential of a lot of its components, we have yet to hear what models will be released, and we've even been denied a simple glimpse of the actual card, beyond the one running sealed behind Perspex at the Australian Game Developers Conference.

ATI, on the other hand, recently let slip its plans for 2003, with a refreshed RADEON 9700 (codenamed R350) due sometime early next year. This will most likely be a higher clocked RADEON 9700 PRO using DDR II. In June or July the next big release is scheduled, codenamed R400, which, funnily enough, is the only solid fact the industry has on the new chipset. In any case, it should mark ATI's transition to a 0.13-micron process.

This will be the big test for ATI. NVIDIA has suffered over the past year making the 0.13-micron move, but has come out of it with a new chip that promises great performance. Although ATI should benefit from bugs ironed out during NVIDIA's teething process, ATI will most likely have its on glitches to puzzle over.



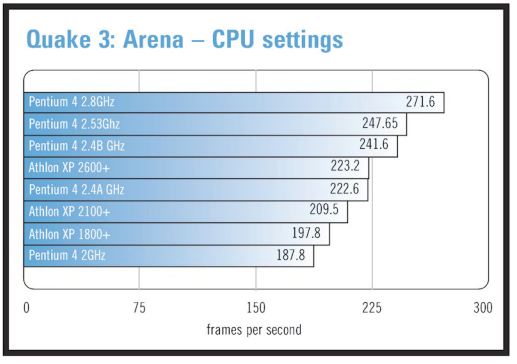


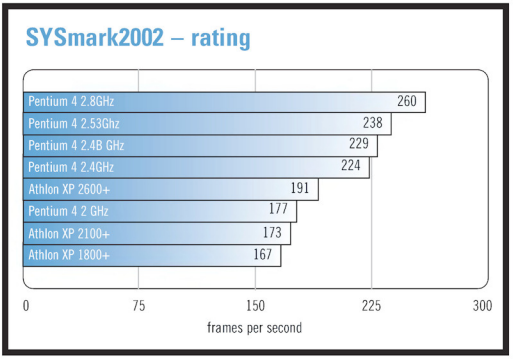
CPUs

The past year has been a turbulent one for the CPU market, and it has ended up at a radically different place to last year. The budget CPU as we used to know it is no more. Intel's Willamette-based Celeron cannot perform anywhere near the similarly priced Athlon XP CPUs and AMD's Duron has all but shuffled off to the great ZIF socket in the sky.

At the high-end, the 533MHz FSB Northwood core has catapulted the Pentium 4 to performance leader, but Intel's notoriously high pricing on new CPUs means that the Athlon XP, or even the low speed, overclocked P4 are much better choices than Intel's latest and greatest offerings.

Next year we are in for another big one, with AMD trying to win back the hearts and minds of the computing public with the newly named Athlon 64 processor line, while taking Intel head on in the server space with Opteron. Intel on the other hand, have a new core in the works for late 2003 – Prescott – and are hotly tipped to debut an 800MHz FSB, paired with motherboards running dual channel DDR400, early in the year.





GmbH 4D-Vision 15in TFT

Bennett Ring has finally discovered an innovative 3D display that really works.

Most of our readers are probably fans of sci-fi movies, and will therefore instantly recognise the concept of 3D displays that don't require the watcher to wear any special goggles, sit in a special booth or chant a bizarre techno pagan mantra. *Back to the Future II* is an example that immediately springs to mind, with a *Jaws* advertisement featuring a giant 3D shark leaping out of a billboard. Truly cool stuff.

It appears that this technology isn't as far fetched as you might think, and is actually on the brink of being launched to the masses, with both Sharp and Sanyo getting ready to release their own versions in 2003. But until then, the 4D-15 TFT will give you a taste of what this technology has to offer.

3D monitors that don't require the use of stereoscopic glasses or other user-mounted equipment are known as autostereoscopic devices, and there are three prevalent techniques used to make this work. The technique in use on the 4D-15 TFT is the catchy 'Wavelength Selective Filter Array Technology' – if you think that's a mouthful, just wait until you hear how it works. Here goes. . .

Using either a standard plasma or TFT screen as a basis, a special Wavelength Selective Filter Array is mounted on top of the screen. This filter spreads out the subpixels of an image into different directions, corresponding to their wavelength. A simpler way of putting it is that the differently coloured image elements can be seen from different spatial positions in front of the screen. If that was at all a simpler way of putting it.

Images that use the 4D technology each contain eight perspective views of the scene, and parts of these views are provided to the viewers. This creates a plurality of correct stereo pairs in front of the screen. As a result of this technique, multiple viewers can stand in front of the screen at a variety of angles, and each will see a true 3D image, without the need for additional viewing devices such as anaglyph or stereoscopic glasses. Due to the use of the eight perspective views, there are eight 'sweetspots' or viewing zones for viewing the 3D image. When a viewer is in between one of these sweetspots, which isn't common, they are presented with a pseudoscopic image. This looks basically like a ghosting or blurring of objects within the scene, but can be solved simply by moving slightly to the left, right, up or down. As the technology matures, more than eight perspective views of the scene will be used, giving even more viewing zones and removing the possibility of pseudonic images. In fact, the larger 50in 4D Plasma screen is capable of using 16 or 24 different perspective views.

We checked out the 15in TFT version, and watched a variety of different applications in action. First up were a couple of pre-rendered demos, which showed off the effect beautifully. It was quite disconcerting to sit in front of what looked like a standard TFT screen only to see objects rising out of the screen, as well as sinking far back into it. It was a much more comfortable experience than any stereoscopic method we'd tried in the past, and it was amazing how natural it felt after a few minutes.

Next up was a pre-rendered 3ds max animation, which used 4D-Vision's 3ds max plugin, and this was just as impressive as the company demos. Finally, the music video for U2's *Elevation* was shown – that's right, a standard 2D video can be converted to 3D. However, it's not a simple process, taking around a week of mantime for every minute of footage, at a cost of around $5,000. However, a new depth of field device that uses a laser scanner is nearing completion, which can be strapped onto existing cameras and will automate this process during the production phase. What this means to you and me is that within five years or so, 3D television is going to become a reality. Yes, 3D television is going to become a reality. Feel free to woot in excitement now.

Unfortunately the only thing we didn't see running were any games, due to a technical screw up, which was a major disappointment. This leads us to believe that the current drivers and/or techniques have issues with games, although it could be simply due to the fact that the current drivers only work with DirectX 7.

While the 3D effects were quite amazing and had the entire *Atomic* team convinced of the worth of this technology, it wasn't without its issues. The monitor was run at a resolution of 1,024 x 768, but this looked closer to 640 x 480 due to the Wavelength Selective Filter, making the Windows desktop unreadable.

This technology is also very expensive at the moment, although the ability to get your existing 15in TFT fitted with the tech for a meagre $3K does lessen the blow a little. You'll also need a beast of a PC to run it – at least a 2GHz CPU with a GeForce3.

There is no doubt this technology has the potential to be massive in both gaming and television, but at the moment it will probably only appeal to those in the areas of point of sale, CAD or medical imagery.

It's hard to explain in words how cool this technology is, but believe us when we say that you should be keeping a very close eye on devices using it.

SPECIFICATIONS

15in TFT monitor with Wavelength Selective Filter Array overlay; eight viewing perspectives; unlimited depth.

WEBSITE: 4D Vision www.4dvision.de
SUPPLIER: VR21 www.vr21.com.au
PHONE: VR21 (03) 9296 2121 **PRICE:** $7,900

7.5/10

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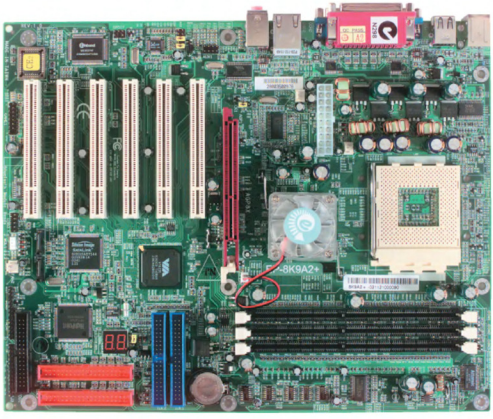
DIGITAL dts SURROUND

DOLBY DIGITAL PRO LOGIC II

Active Servo Technology

EPoX 8K9A+

John Gillooly unlocks the Athlon's power with this new mobo.



Every so often a motherboard comes along that has a feature with the potential to change the way we look at those humble multi-layer PCBs that line our cases. EPoX's KT400 offering, the 8K9A+, distinguishes itself with such a feature and manages to pack in some very yummy looking extras as well.

What got us Lab dwellers so excited about this board is its ability to change the multiplier on any Athlon XP CPU. That's right: no longer would we need to make Bennett don his magnifying eyeglasses, grab the silver lacquer and stop sniffing the superglue long enough to permanently join bridges and unlock our Athlon XP CPUs. Plus, the added bonus of having such a feature on a board that supports lockable PCI dividers and some insano frontside bus speeds is that you have what could be the perfect board for the Athlon overclocker.

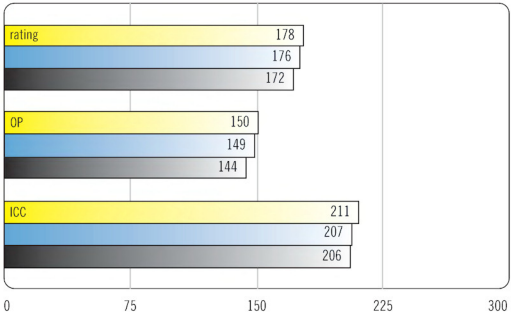
As well as this BIOS trickery, the 8K9A+ also sports a range of extra features. It has Serial ATA and Parallel ATA RAID ports onboard, both using separate controller chips rather than some sort of hybrid. We have found this combination is the the easiest and most flexible implementation of these technologies. It is to be applauded after months of seeing confusing and often nonsensical combinations of ports – the most appalling being ASUS' use of one SATA and one Parallel ATA port on its RAID controllers for some models of motherboards.

Other features include a LED POST readout onboard and even a chipset cooler with one of those LED-lit blue Perspex fans that have become so popular of late. If that doesn't float your case-modding boat, then how about the fact that EPoX bundles the board not with pesky ribbon IDE cables, but nice pastel green rounded IDE cables?

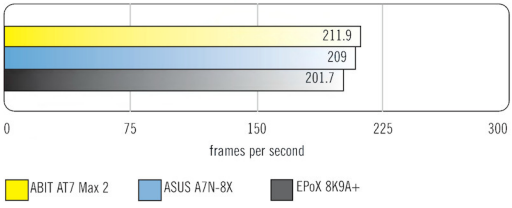
EPoX has gone to a lot of effort to design the board and packaging with the enthusiast in mind, so we eagerly delved into our benchmarking.

We tested with an Athlon XP 1800+ and 512MB DDR333. For comparison we tested against the ASUS A7N-8X, which uses the nForce2 chipset from NVIDIA, and the ABIT AT7 MAX 2, which uses the same KT400 chipset as the 8K9A+. The nForce2 and KT400 are neck and neck in the performance

SYSmark2002



Q3A – CPU



stakes at the moment, and the 8K9A+ does little to shake things up. It does however, perform mighty close to not only the ABIT AT7 MAX 2 but also the nForce2-powered ASUS A7N-8X in all of our tests.

In Quake 3 the difference is under 3% between the three boards tested and just over 3% in SYSmark2002.

While not differentiating itself in the performance stakes, the 8K9A+ delivers an amazing little package of features for the Athlon XP lover. With a BIOS chock full of tweaks – enough to satiate the most ardent tweakers and twiddlers – it appeals to the overclocking and high performance crowd, while the SATA and Parallel ATA RAID ports will make even the most picky of file storage nutters happy. Of course, we can't forget the glowing blue light on the heatsink, which caters for both small children and those easily impressed by light and movement.

So many mobos nowadays are built around a philosophy of cramming as many features in, however it is rare to see one so focused upon performance and tweaking as the 8K9A+. It's good to see that EPoX is staying true to its performance goals.

SPECIFICATIONS

VIA KT400 chipset; AGP 8x; USB 2.0; two SATA ports; two Parallel ATA RAID ports; LED POST readout.

WEBSITE: EPoX www.epox.com

SUPPLIER: Westan (03) 9543 7733

PHONE: Westan (03) 9543 7733 **PRICE:** TBC

9/10

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CREAM 4618Feb

LaCie Big Disk

One of the strongest emerging areas in the PC world is digital video, and we're not just talking about nudie Net flicks. Unfortunately most desktop machines simply don't have anywhere near enough storage capacity to keep up with the demanding storage needs of DV, especially for those in the professional DCC arena. Enter the LaCie Big Disk – with up to half a Terabyte of capacity this beastie will store enough prOn to keep you satisfied for years to come.

Thanks to the wonders of FireWire, this device is hot swappable and doesn't require any drivers when used under Windows XP or Mac OS X. This speedy interface allows data to be transferred to and from the device at a sustained throughput of between 30MB to 40MB per second. Unfortunately USB 2.0 support is absent, which would have been a nice option considering the vast number of motherboards that now support this interface.

The Big Disk is available in one of two configurations: a 400GB version which uses 7,200rpm Maxtor drives with 8MB of cache, suitable for those who demand the ultimate in performance, and a slightly larger 500GB version using 5,400rpm Maxtor drives and 2MB of cache. If 400GB+ of storage space still doesn't satisfy your storage requirements, up to 63 Big Disks can be chained to provide even more capacity, which can then be set up in RAID 1 (mirroring) or RAID 2 (striping) configurations.

If you're looking for a rack-mounted storage device, the Big Disk will squeeze into a 19in rack thanks to its 5.25in form factor, and the use of an external power supply unit helps to keep temperatures nice and low without the need for an internal cooling fan. The device uses a very sturdy Aluminium/ZAMAC alloy, which helps to dissipate heat as well as give the Big Disk a rugged construction that you'll feel confident moving around. This alloy shell also looks shtonkingly sexy, which can be an important factor for designers and/or Mac users.

At approximately $4 per gigabyte, the Big Disk is only slightly more expensive than a stack of standard IDE drives, and is infinitely more convenient. Highly recommended, although USB 2.0 support would have been desirable.

SPECIFICATIONS

FireWire; 400GB = 7,200rpm Maxtor HDD with 8MB cache; 500GB = 5,400rpm Maxtor HDD with 2MB cache.
WEBSITE: LaCie www.lacie.com.au
SUPPLIER: LaCie www.lacie.com.au
PHONE: LaCie (02) 9669 6900 **PRICE:** $1,899/$2,255

8.5/10

Top Gun AfterBurner force feedback joystick

This is one helluva big joystick, so unless you've got some serious desk space to play with, you can stop reading the review right now.

Those with desk real estate to spare will love the modular nature of this device though, which allows you to set the joystick up in a way that best suits your desk space and gaming style. The throttle is detachable from the joystick base, which is our preferred mode, allowing you to place your keyboard between the joystick and throttle.

Setting up this stick was as easy as you'd expect; install the drivers and mapping software, plug in the joystick and fire up your favourite flight sim for some bone-shaking, force-feedback action. Unfortunately the included control mapping software was nowhere near as intuitive as the Logitech wireless stick we checked out last month, especially when it came to using the pre-configured options for different games.

Stick ergonomics were for the most part very comfortable, although the button layout was a little wide apart – with a little practice however, most will come to grips with it. Rudder functionality is available in one of two methods; via the twisting of the main stick, or with the use of a small rudder toggle switch on the throttle. It's great to see that the designers have given users the choice of which to use.

Force feedback is a very subjective area of any joystick review, but we've got to say that cable-based systems are infinitely superior to cog-based systems, such as the cog-based unit found within this setup. Joysticks that use cogs to supply force feedback have a very clunky, 'notchy' feel to them – you can feel each tooth on a cog lock into position with the teeth on the another cogs. As a result the sensation is nowhere near as fluid as a real world aircraft's joystick, and hampers accuracy. Apart from the inherent limitations caused by the cog-based mechanism, the different sensations for varying situations, such as weapon firing, stalls and damage effects, conveyed accurately what we expected to feel under each of these situations.

It wasn't long ago that you couldn't get a decent joystick for under $300, so it's refreshing to see that this feature packed joystick is selling for a reasonable $200. And at this price it's easy to overlook the couple of minor problems we experienced.

SPECIFICATIONS

Detachable throttle; seven programmable buttons; dual motor Immersion Touchsense force feedback.
WEBSITE: Thrustmaster http://au.thrustmaster.com
SUPPLIER: Thrustmaster http://au.thrustmaster.com
PHONE: Thrustmaster (02) 8303 1818 **PRICE:** $199

8/10

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- 12 total device bays, 4x5.25", 3x3.5" ,5x3.5" hidden for HDD.
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- 2 x front USB2.0 ports

PC-6087A
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PC-6089A
Blue acrylic door $439.00 RRP

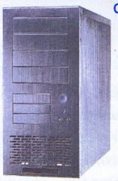
PC-39A
Silver hard anodized aluminium mini case with bulit-in 2 mobile racks. 8 total device bays 2x5.25", 1x3.5", 3x3.5" hidden for HDD. 2 x ATA133 lockable mobile racks. 2 x 8cm sleeve bearing case fans. 2 x front USB ports
$425.00 RRP

PC-60USB (Silver)
$299.00 RRP

PC-65USB (Silver transparent panel)
$369.00 RRP

Common features
- Hard anodized aluminium midi case.
- Removeable mainboard tray.
- 12 total device bays, 4 x 5.25", 3 x 3.5", 5x3.5" hidden for HDD.
- 4x8cm sleeve bearing case fans. 2 x front USB ports

PC-61USB (Black)
$340.00 RRP

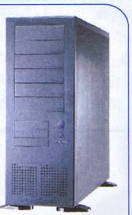


Common features
- 12 total device bays, 4 x 5.25", 2 x3.5", 5x3.5" hidden for HDD.
- 3 x 8cm sleeve bearing case fans.
- 2 x front USB ports

PC-7 (Black)
Full aluminium anodised black midi case
$260.00 RRP

PC-5 (Beige)
Economy beige aluminium midi case with plastic front
$190.00 RRP

Common features
- Hard anodized aluminium full tower case
- 15 total device bays, 6x5.25", 3x3.5", 6x3.5" hidden for HDD. 4x8cm ball bearing case fans.
- 4 x front port USB extender panel

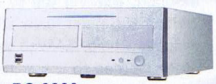


PC-70USB (Silver)
$499.00 RRP

PC-71USB (Black)
$539.00 RRP

PC-30
Silver mini tower full aluminium anodised. Sliding tray for ATX motherboard. 2 Fans. Total 7 bays 2x5.25", 2 x 3.5", 2 x 3.5 hidden
$260.00 RRP

Home Theatre Cases

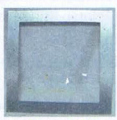


PC-9300
Silver hard anodized aluminium desktop case. Total 4 drive bays. 2x5.25", 2x3.5" internal bays. 2 sleeve bearing fans. Suitable for Micro ATX M/B. 2 x front USB2.0 ports. Requires micro ATX PSU
$299.00 RRP

All cases come without power supplies

Case Accessories

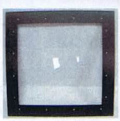
EX-10
Aluminium front panel I/O adaptor. Allow easy front access to all PC ports. $80.00 RRP



Panel-75

Panel-65
Left side window panel for PC-60USB Case
$70.00 RRP

Panel-75
Left side window panel for PC-70USB Case
$105.00 RRP



Panel-75B

Panel-65B
Black Left side window panel for PC-61USB Case
$75.00 RRP

Panel-75B
Black Left side window panel for PC-71USB Case
$115.00 RRP

PC-T4

PC-T4B

PC-T4
Silver LCD Dual Thermometer to fit 5.25" bay $59.00 RRP

PC-T4B
Black LCD Dual Thermometer to fit 5.25" bay $59.00 RRP

PC-T3
Silver LCD Dual Thermometer to fit 3.5" bay $59.00 RRP

PC-T3B
Black LCD Dual Thermometer to fit 3.5" bay $59.00 RRP

MF-20
Aluminium extension mounting kit for 2 x 3.5" Drives. Attaches under your existing HDD bay
$16.00 RRP

MF-30
Aluminium extension mounting kit for 3 x 3.5" Drives. Attaches under your existing HDD bay
$19.00 RRP

MF-30

PC-M2

PC-M2B

PC-M2
Lian-Li silver hard anodized aluminium mouse mat
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PC-M2B
Lian-Li black hard anodized aluminium mouse mat
$15.00 RRP

EX-12
Lian-Li SCA-2 Hot Swap bay supports 3 Ultra-160 80 pin SCA drives $245.00 RRP

PC-C2 **PC-C4** **PC-F7**

Aluminium bezels for FDD and popular CDROMs

PC-C2	For Sony CDU-211	$12.90 RRP
PC-C4	For Pioneer DVD-116	$12.90 RRP
PC-C6	For Teac CD-540E CD-ROM drives	$12.90 RRP
PC-C8	For LG CRD-8484B	$12.90 RRP
PC-C10	For Aopen DVD-1648	$12.90 RRP
PC-C12	For Asus CD-S520A	$12.90 RRP
PC-C14	For Aopen 952E/AKH	$12.90 RRP
PC-F7	3.5" Teac/Mitsumi floppy disk drive	$9.90 RRP

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VIC		
Digiworld	Melbourne	03-9663 6699
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Quality & Innovation	Brisbane City	07-3220 2500
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Grand RF CMOS USB

When it comes to producing quality college-teen-cheerleader dressing-room-toilet-hidden-camera video essays, you simply can't beat the convenience of a wireless camera. The number of times our cameras have been discovered due to a wire running from the toilet bowl to a hole in the ceiling are countless, so you can understand our excitement over this wireless jobbie. Yes, excitement.

The 2.4GHz radio frequency must be getting as crowded as a whorehouse on payday in Kalgoorlie, as it seems that every RF device on the market is making use of this frequency.

Just like this wireless camera, which has a range of approximately 30 metres through walls, and 100 metres without. In case this device conflicts with any of the other RF devices you have, four different channels around the 2.4GHz spectrum can be selected.

To capture the signal from the camera, a USB receiver is included, allowing you to capture the signal directly to your PC without the need for a VIVO video card. This receiver also includes Audio, S-Video and RCA inputs, so you can hook up other devices to the receiver, though we're not sure why you'd want to.

Setting up this unit is the definition of simplicity: plug in the camera and USB unit, install the drivers, and illegal surveillance city here we come. The included software is well rounded, allowing the device to be activated when motion is detected, and even for the base station to be monitored remotely via TCP/IP or IPX.

Unfortunately for this unit, it uses a rather crappy CMOS camera, and as a result the image quality is quite shocking. It's good enough to just make out who the person is that is being filmed, but it's nowhere near clear enough to capture all the, erm, intimate details. This has to be the biggest flaw of the unit, and costs it dearly in its final score.

However, the benefit of using a CMOS camera is that this device is very cheap – $400 cheap in fact. At this price it makes for a decent solution for monitoring areas, although we're a little worried that due to the very poor image quality it will be quite difficult to make out who the punk is that just cleared out your house and/or messed with your partner/dog.

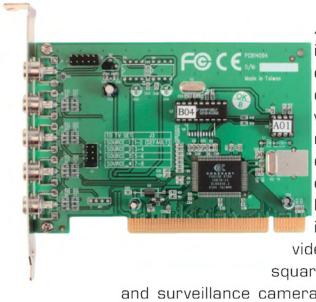
SPECIFICATIONS

2.4GHz RF; 300,000 pixel CMOS camera; USB receiver; captures video and audio.

WEBSITE: Grandtec www.grandtec.com
SUPPLIER: Nucleus www.nucleuscomputer.com.au
PHONE: Nucleus (03) 9569 1388 **PRICE:** $399

6.5/10

Swann Alert 4



Atomic has been delving into the art of digital cameras lately, usually of the hidden or small variety, so it was only natural that we checked out the Alert 4, a PCI capture device that is happy to suck up the input from four different video cameras. Targeted squarely at users of security and surveillance cameras, this card promises to turn your PC into a machine that the guards at Fort Knox would be happy to catch bad guys with.

To install this device you simply whack it into an empty PCI slot, install the drivers and away you go.

There are four RCA inputs on the back of the card, as well as a single RCA output. But the real power of this package isn't in the hardware – it's the included software that makes it worthy of your attention. And it probably explains the very high asking price of $499, which the card itself certainly does not warrant.

As well as the PCI card, a complete version of SureLabs Stingray Professional Ultra 2.0 is included within the pack. This powerful piece of software monitors each of the four cameras that you can plug into video capture card. Using some tricky AI programming (actually, it's not too complicated) it then detects if anything moves in front of each camera.

Provided the host PC is hooked up to the Net, it will then automatically send you a lovely screenshot of the movement in an email.

Or if you have a voice modem in your PC, it will actually call your mobile and let you know about the warning – surveillance gear doesn't get much cooler than that, especially in this budget price range.

If you'd rather monitor your cameras remotely than rely upon the software to detect movement, you can connect to the host PC via the Net or LAN, and have access to everything your cameras are seeing.

Considering how cheap this package is, if you're in the market for a new surveillance system you can't really go wrong with this kit.

The capture card does the job, but it's the user friendly, feature rich Stingray Pro Ultra software that really clinches the deal.

SPECIFICATIONS

PCI capture card with four RCA inputs and one RCA output; plus Stingray Pro Ultra 2 software.

WEBSITE: Swann www.swann.com.au
SUPPLIER: Swann www.swann.com.au
PHONE: Swann 1300 138 324 **PRICE:** $499

9/10

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Cooler Master ATC-610-GX1

Thank God it's not illegal to copulate with inanimate objects, as that's exactly what we wanted to do to the Cooler Master ATC-610-GX1. We thought we'd seen sexy cases until we opened the box of this stunner – after quickly cleaning up the sticky mess we'd all made downstairs, we gaped in awe at the wonder that is the ATC-610-GX1.

Looking more like a component from a Bang & Olufsen hi-fi setup than a computer case, the ATC-610-GX1 wouldn't seem out of place in Jamie Packer's lounge room. It's a very similar case to Cooler Master's ATC-600, but the front panel has been reworked this time around: instead of having a glass panel, there are now two swing down Aluminium front doors which cover up two 5.25in drive bays, a 3.5in floppy bay, a couple of USB ports and a single IEEE 1394 port. These front doors slowly swing down in a way that would be perfectly matched by the swooshing sound of the doors in Star Trek. Surprisingly absent from the front of the case is a reset button.

Like all Cooler Master cases, the ATC-610-GX1 is constructed from Aluminium, but this isn't immediately obvious due to the exquisite metallic black paint job – it's so perfect that the surface of the case could actually be used as a mirror, if you happen to be that vain. A negative side effect of this is that fingerprints stand out like the inevitable erection that occurs when a teenage boy is called to the front of the class, and it also seems quite prone to scratching.

You'll be able to fit a full-sized PSU into this unit, but unfortunately there is only enough room to install a Micro-ATX motherboard. This is a little disappointing due to the relatively large size of this case – we initially expected to be able to fit in a full-sized ATX motherboard when we first saw this beastie. As you'd expect from such a premium case, all edges within the interior are finger friendly, and a single 60mm fan at the rear should help out with cooling, with space for two more.

All of this goodness comes at a cost: $440 without a PSU, to be exact. Yowsers. However, compared to the earlier models of Cooler Master cases we've seen, this is definitely cheaper than we expected.

If you're after the ultimate in high-end cases, nothing comes remotely close to the beauty of the ATC-610-GX1.

SPECIFICATIONS

423mm x 140mm x 445mm; two 5.25in, three 3.5in bays; Micro-ATX motherboard compatible.
WEBSITE: Cooler Master www.coolermaster.com
SUPPLIER: Australia IT www.australiait.com.au
PHONE: Australia IT (03) 9543 5855 **PRICE:** $440 (No PSU)

8.5/10

Grandtec Tele Viewer Pro

At the end of a hard day of gaming, many PC users just want to sit back and relax without having to do any of that stressful thinking business, which is where watching the telly fits nicely into our hectic couch potato life styles. TV tuners are becoming increasingly common in PCs, as they allow you to use your monitor as a second TV, at a much lower cost than a second TV.

The Grandtec Televiewer is yet another TV tuner to hit the market, but with a couple of differences that make it stand out from the rest of the pack.

First up, this device is external, so you needn't worry about having to take apart your PC to install it. In fact, installation is so pathetically easy that we didn't even need to consult the manual at all, which is very rare for a TV tuner, as they are usually totally tedious to install and tune. A pass through cable is provided to run from your video card to the back of the Tele Viewer, and your monitor is then plugged straight into the back of the unit.

There are several inputs on the back allowing you to hook up a standard TV aerial and a cable TV connection, as well as a DVD or VHS player. Tuning the device into the available channels is a simple matter of hitting the tune button, located on the remote, and within seconds the Tele Viewer has found all of your available channels.

What's really cool about this box is that it de-interlaces the TV signal, resulting in gob stopping image quality. You can run the TV signal at 640 x 480, 800 x 600 and 1,024 x 768, and there is no doubt in our mind that this tuner provides the clearest image you can find.

There is one problem with this device, and it's that you can't use the TV features at the same time as you use your PC – it's either one or the other, but not both. So if you're looking for a TV tuner that will allow you to admire Flick in Neighbours while you're doing a little fragging, this is not the box for you.

If all you want to do is watch TV through your monitor, you can't go past this easy-to-use and gorgeous image quality tuner, so long as you don't mind the premium price that comes attached.

SPECIFICATIONS

External TV tuner box supports progressive 3D frame buffer deinterlace; Y.Cb.Cr. cable.
WEBSITE: Grandtec www.grandtec.com
SUPPLIER: Nucleus www.nucleuscomputer.com.au
PHONE: Nucleus (03) 9569 1388 **PRICE:** $282

8/10

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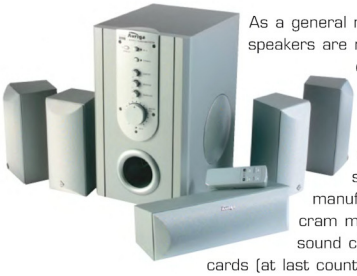
Auriga Active 5.1 home theater surround system



As a general rule, computer speakers are no longer the crackly, tinny, injection-molded plastic desk ornaments they once were. As sound processor manufacturers rush to cram more and more sound channels onto their cards (at last count we were up to 7.1 on some), PC speakers of the 5.1 surround variety have plummeted in price to the $200 range, in which the Auriga Active 5.1s sit.

Considering the price range, it is insane to expect the same levels of sound quality achieved with more expensive PC speakers or a dedicated sound system. But as Hercules' XPS510 speakers showed us, cheap does not necessarily mean bad.

Auriga's Active 5.1 surround system is far from being bad, instead it sits in the range of decidedly average, performing differently in gaming, music and DVD tests. If you are a music fan and will be employing the Auriga speakers with music as a major part of their existence then we would recommend going for a decent 2.1 speaker setup instead. These suckers have incredibly muddy bass that lacks any real variance in tone paired with annoyingly tinny high end, perfect for massacring anything from Mr Bungle to Radiohead.

Game performance, while not earth shattering was still respectable, with good surround sound in games that make use of it, such as UT2003. It is also passable for DVD, while it lacks the subtle tone differences of high-end speakers, it is fine for watching the occasional DVD.

For what you get, these really are amazingly cheap. In the box are four small upright speakers, a center speaker and a subwoofer. The sub features two types of 5.1 input, based on what sort of sound card you have.

All the speakers use spring clips and speaker wire that needs to be cut and stripped from the 30m roll that comes packed with the system.

These speakers are cheap and functional, which is all some people want. If gaming and the occasional DVD is your thing these will cope with the strain, but if you want to get the most from your PC's audio then it is best to look at a higher price bracket or a 2.1 speaker system.

SPECIFICATIONS

5.1 speaker set; remote control; speaker cable; subwoofer with captive power cable.

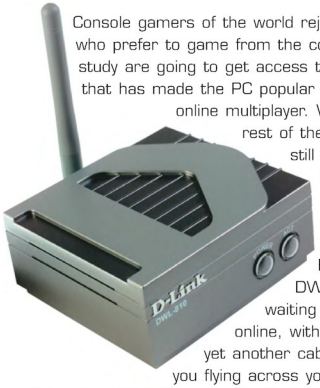
WEBSITE: Auriga www.go4auriga.com

SUPPLIER: AKA Technology www.akatech.com.au

PHONE: AKA Technology 1300 655 911 **PRICE:** $209

7.5/10

D-Link DWL-810



Console gamers of the world rejoice! Finally, those of us who prefer to game from the couch rather than the study are going to get access to one of the features that has made the PC popular as a gaming machine – online multiplayer. Well, at least for the rest of the world that is. . .we're still waiting to see if and when Australia's PS2, GameCube and Xbox multiplayer services are going to be launched. But when they do, the DWL-810 will be ready and waiting to bring your console online, without having to drape out yet another cable – just waiting to send you flying across your living room.

Using the 802.11b protocol, this Ethernet-to-wireless bridge plugs into the Ethernet port on the network adaptor of the PS2 or GameCube, or directly into the back of your Xbox. In fact, you can use this on any device that has an Ethernet port, such as a printer, but D-Link seems to be pushing it most as a wireless solution for the next gen consoles.

For the asking price of $270, you get a small cube of approximately 90mm x 80mm x 40mm, so it's not as if this thing is going to be hogging any floor space. If you purchase a couple of these boxes, you'll be able to system link a couple of Xboxes without the need for a system link cable, but you'll be paying a high price for the privilege of wireless as two of these will set you back some $540.

Unfortunately the price of this box does not include the wireless access point you'll need to share your Net connection when you want to bring your console online. So unless you're already running a wireless LAN at home, you'll need to add another $300, at least, for an access point, making this a very expensive proposition just to get rid of a single cable.

Setting up this device is quite simple, especially when compared to some of the earlier Ethernet-to-wireless bridges. If you need to tweak your IP and subnet settings for your console, you'll have to first attach the DWL-810 to your PC, and the device will then remember your settings, saving you from having to re-enter them.

While this device is nice and small, easy to set up, and banishes the old RJ45 cables to the bottom of your trash can, it's ridiculously expensive for what it does. In fact, it's so expensive that all but the richest of gamers will have to pass up the opportunity to game – wireless style.

SPECIFICATIONS

90mm x 80mm x 40mm; 802.11b compatible; Ad Hoc or Infrastructure modes supported.

WEBSITE: D-Link www.dlink.com.au

SUPPLIER: D-Link www.dlink.com.au

PHONE: D-Link 1300 766 868 **PRICE:** $269.95

6.5/10

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P4 Titan 667 series AGP 8X+Dual Channel DDR

GA-8INXP Intel® E7205 Chipset

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	GLOBAL	02-9644-3900		SYNNEX	1300-880-038	PERTH	SYNNEX 08-9204-5700
	SYNNEX	02-9748-9800			(TOLL-FREE)		HALLMARK 08-9477-5440
	RECTRON	02-9748-7725		RECTRON	03-9561-6166		

ADELAIDE	HALLMARK	08-8340-3740	
DARWIN	HALLMARK	08-8981-9111	

New Zealand

Black Diamond Technology Limited
64-4-560-9100
Checksun New Zealand Limited
64-9-579-8832

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Upgrade Your Life™ www.gigabyte.com.tw

GIGABYTE™ TECHNOLOGY

Bose 3-2-1 home entertainment system

Audio giant Bose's 3-2-1 home entertainment system is a 2.1-channel DVD player with CD, MP3 and radio chucked in for good measure. Two discreet drivers in each satellite allow the 3-2-1 to emulate surround sound – it takes the five satellite signals used in Dolby Digital and plays them back in specific directions to mimic 5.1. Although the speakers need to be carefully placed in order to work effectively, they do manage to produce a decent imitation of a real 5.1 kit.

It's a little weak in the rear channels, but still does an admirable job, especially when compared to the other 2.1 systems we've heard.

Overall sound quality with this system is frikkin brilliant, which isn't surprising considering Bose's well-earned reputation. High frequency and mid-range sounds are clear, rich and laden with atmosphere.

Games sound truly astounding, with crisp effects and a great pervasive sense of ambience.

The bass produced by the 3-2-1 is rather low frequency, so most of the time it provides more of a bowel-trembling physical impact than an ear-bleeding audible one.

For most movies, music and games the sub is more than adequate, although we occasionally found ourselves wishing it supplied a little more of a sphincter quaking effect in heavy action scenes and thumping music.

The 3-2-1 unfortunately still suffers from a few nagging issues. Component inputs are a little limited: while it has three sets of audio inputs (including one optical S/PDIF), there's only one video input.

As a result, you can't use the 3-2-1 to plug in two consoles (or a console and VCR) simultaneously, which is amazingly frustrating.

It's also region locked, so if you're intent on importing your DVDs you're best off shopping elsewhere.

To a certain extent, the 3-2-1 requires you to exchange connectivity and features for audio quality.

If you're after a simple system that delivers excellent sound (and you can handle the trade-offs) this is still a first class kit.

SPECIFICATIONS

DVD, CD, MP3 CD and CD-RW support; Dolby Digital 5.1 and DTS support; wattage not disclosed by Bose.

WEBSITE: Bose www.bose.com

SUPPLIER: Bose Australia www.bose.com.au

PHONE: Bose Australia 1800 023 367 **PRICE:** $1,999

7/10

Evoluent Vertical mouse optical

We used to think we knew what mice looked like: small white hairy critters with little pink tails and twitchy noses. Then some twisted genius went and grew a human ear on the back of one little rodent, forever shaking the certainty that a mouse was a mouse.

In the computing world the mouse shape has changed slightly over the years, but it wasn't until now that someone has created a radically different mouse, tipping the world on its side in more ways than one.

The Evoluent Vertical mouse is the strangely shaped beast we are talking about. Essentially following the standard mouse layout, the Vertical mouse differentiates itself by sitting upright, placing the buttons on the right hand vertical face of the contraption. This allows you to control the mouse with your hand in a more natural position than the horizontal one encouraged by normal mouse designs.

For anyone who spends a large amount of time at their PC, this provides noticeably less strain on your hand and wrist, much like a good trackball.

While the mouse feels odd at first it quickly becomes comfortable for all but those possessed with big hands. In this case your hand becomes cramped and squished against the desk, and unlike other mice, the design means there is little you can do about it.

Perfect for sedate day-to-day tasks, the Vertical mouse is not the best for high adrenaline twitch gaming. It simply becomes too hard to grip thanks to the tapered downwards design, which makes for some tense moments as you try and regain a grip on the top of the mouse before the searing white hot pain of a rocket enema ends your flag run.

Leave the games alone or just attach a second mouse for fragging and the Vertical mouse is very useful.

If you spend hours a day at your PC, then your wrists will thank you for trying the Vertical mouse.

SPECIFICATIONS

Ergonomic optical mouse; USB or PS2; five programmable buttons; and scroll wheel.

WEBSITE: Evoluent www.evoluent.biz

SUPPLIER: F1 Computing Services www.f1computing.com

PHONE: F1 Computing Services (03) 9705 0420 **PRICE:** $119.95

8/10

EPoX COMPUTER CO.,LTD.

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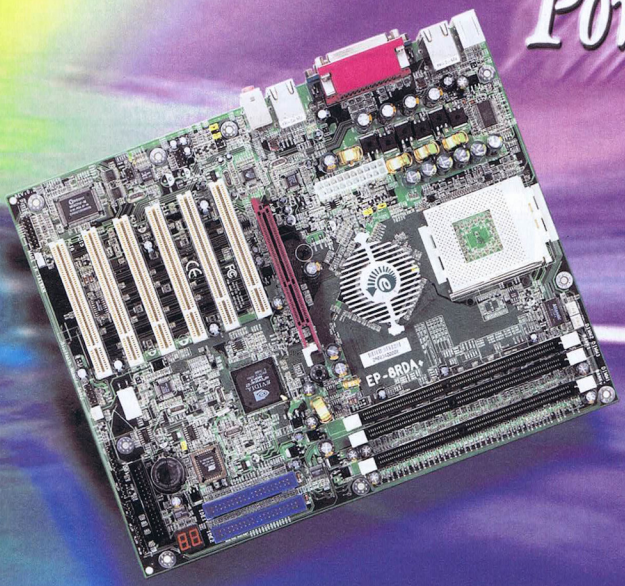

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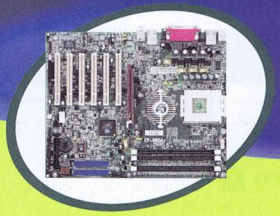
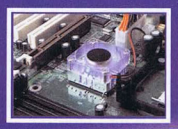
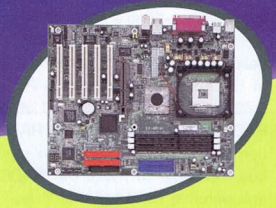
nVIDIA nFORCE 2







8RDA+

MAGIC

- Socket A for AMD Athlon XP and DURON
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- Supports 333 MHz FSB
- Supports 3xPC2700 DDR DIMM
- 6xPCI 1xAGP 8X
- Supports 6CH audio
- ATA-133 IDE devices supported
- Supports IEEE1394 & USB2.0
- Supports 10/100Mb Ethernet LAN function
- Supports POST PORT debug LED display

4PEA+

MAGIC

- Socket 478 for Intel® Pentium 4 CPU
- Supports 533 MHz FSB & Hyper-Threading Technology
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- Supports 3xPC2700 DDR DIMM
- 5xPCI 1xAGP 4X
- Supports 6CH audio
- Supports Serial ATA up to 2 devices
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- Supports 10/100Mb Ethernet LAN function
- Supports POST PORT debug LED display

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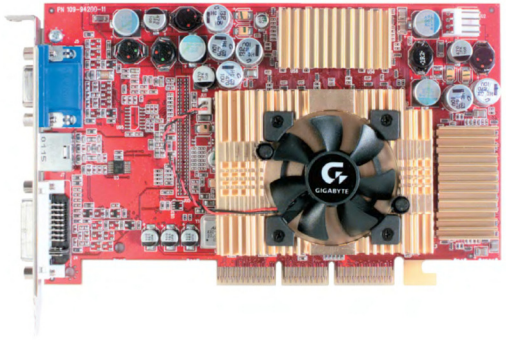
Gigabyte RADEON 9700

We've seen the PRO, now John Gillooly checks out the vanilla 9700.



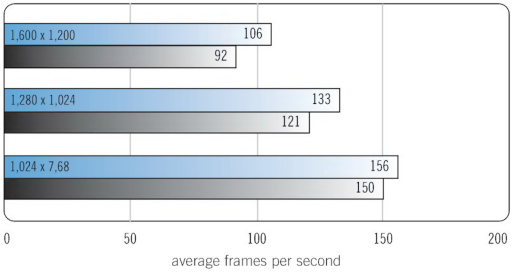
Over the past months we have seen so many different flavours of RADEON 9700 PRO cards flood through the Labs. The strange thing is that we are still in awe of the power packed into the little video card. ATI has done something magical to create the RADEON 9700 PRO and has worked some financial magic to deliver a new variant that promises top end performance at a mid-range price.

Enter the RADEON 9700, the card that lacks the PRO moniker but differs from its more expensive brother only in terms of speed. The RADEON 9700 PRO burst out of the gates running with a core of 310MHz and a DDR-RAM speed of 650MHz, and the vanilla RADEON 9700 has a core of 275MHz and a RAM speed of 550MHz. Unlike the crippled RADEON 9500 series, the RADEON 9700 features the full complement of eight texture pipelines and the 256-bit memory bus that help to make the RADEON 9700 PRO the untouchable monster that it is.

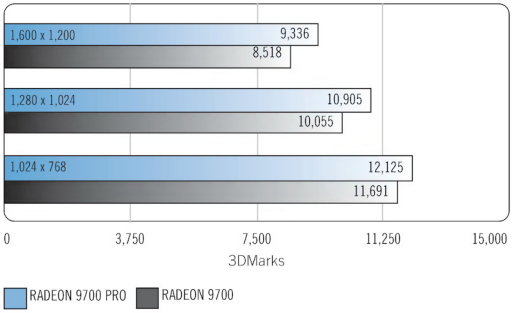
Like the other cards seen so far, the Gigabyte RADEON 9700 comes on the same red PCB as the RADEON 9700 Pro and 9500 cards that have passed through the Labs. Sapphire has recently updated its PCBs to increase motherboard compatability and it is unknown when these redesigned black PCBs will filter through to other companies' cards. What this similarity does do is make it hard to determine whether you have a Pro class card or not, especially when combined with the drivers that only call the cards RADEON 9700 class. This means that you need to be wary when getting an unboxed card or system with the card already installed. The RADEON 9700 is touted to chew through the frames, but you don't want to pay a premium for it.

When the card arrived we were all keen to see how much performance difference was to be seen with the 9700, especially as they cost significantly less than the higher clocked RADEON 9700 PRO. On top of that, we decided to see if we could clock the 9700 up to 9700 PRO speeds, something that this card had no problem with. If we pushed much further the card exhibited some nasty artefacts but at 9700 PRO speed the card was rock solid. In 3DMark2001SE Pro we scored 12,555 3DMarks with the maximum stable overclock, up a couple of hundred 3DMarks from the 9700 PRO score of 12,125.

Unreal Tournament 2003



3DMark2001SE Pro



We then clocked the 9700 back to normal speed and lined it up against the 9700 PRO in 3DMark2001SE Pro and Unreal Tournament 2003. In every test but the UT2003 at 1,600 x 1,200, there was less than 10% difference in speed between the 9700 and the 9700 PRO, delivering performance right at the leading edge of current 3D graphics.

The 256-bit memory bus also helps the 9700 perform when using antialiasing and anisotropic filtering, delivering an instant image quality boost to all your existing 3D games. It is surprising that there is such a minimal performance difference with the RADEON 9700 considering the significant price gulf between the cards.

Gigabyte's RADEON 9700 has in one fell swoop snatched the title of video card of the moment in the Labs. Who can argue with the option of a cheaper entry point into the latest 3D technology? It's the best chance to go high-end 3D without the high-end price tag.

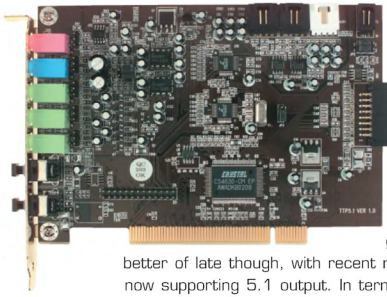
SPECIFICATIONS

ATI RADEON 9700; 128MB DDR-RAM; AGP 8x; D-Sub; S-Video TV-out; and DVI.

WEBSITE: Gigabyte www.gigabyte.com.tw
SUPPLIER: Synnex www.synnex.com.au
PHONE: Synnex 1300 880 038 **PRICE:** $550

9.5/10

SonicXplosion DVD



For some time now, sound cards have not exactly been at the cutting edge of silicon development. AC97 onboard audio has gotten much better of late though, with recent motherboards now supporting 5.1 output. In terms of sound for gaming, apart from Creative's EAX work, everything uses DirectSound acceleration at least, which means any old DSP can pump out the gaming sound.

In order to differentiate itself, Pure Digital (formerly known as Videologic) has launched the SonicXplosion DVD, a re-badged Terratec card that is focused at the burgeoning PC-based home cinema market. The card has analog 5.1 outputs as well as S/PDIF optical in/out for pass-through decoding. Sound quality in games is crisp and clear, as is the musical output thanks to the high quality associated with the Terratec and Pure Digital brands.

But this is a card focused on DVD sound output, which is achieved through the software bundle that accompanies the card (a major differentiator between sound cards nowadays is the software bundle). The card itself isn't capable of hardware 5.1 decoding, like nearly all cards that tout Dolby 5.1 support, and instead relies on software decoding through the bundled WinDVD software. The same holds true for the Pro Logic II and DTS decoding also supported by the card. Onboard are enough analog outputs to drive up to a 5.1 set of speakers to match the Dolby 5.1 decoding undertaken in WinDVD, as well as an optical out, which is perfect for hooking up other speakers to the card. Optical in is provided on the card (unlike most solutions that use a drive bay or external box for extra ports like optical out). This provides the huge potential for the card to be used for pass-through decoding of audio streams. As the card is designed for entertainment not DV, it lacks the IEEE 1394 port that is possessed by some other competing solutions.

The card allows for maximum playback and recording at 20-bit 48kHz, less than the Audigy 2, but still offering very respectable quality, perfect for DVD listening. If you want good quality 5.1 functionality, then the SonicXplosion delivers.

SPECIFICATIONS

Crystal Sound CS4630-CM chip; software Dolby 5.1, Pro Logic II and DTS decoding; hardware assisted MP3 decoding; onboard headphone amp.

WEBSITE: Pure Digital www.pure-digital.com
SUPPLIER: Westan www.westan.com.au
PHONE: Westan (03) 9543 7733 **PRICE:** $329

8/10

Targa TMU-306

Now that MP3 players are becoming more common than squishy doggy surprises at your local park, manufacturers are striving to make their players stand out from the crowded pack by integrating additional functionality into their devices. The Targa TMU-306 is the latest of these multifunctional MP3 players, yet it sells for around the same price you'd expect a simple MP3 player to cost.

With 128MB of memory, this player has plenty of room for enough MP3 and WMA files to keep you bopping away like an idiot for several hours. A single AAA battery provides 12 hours of playtime, provided you don't enable the backlight for continuous illumination/posing.

The software provided to upload songs to the player is incredibly easy-to-use, and there isn't a hint of Digital Rights Management protection in sight. Gotta love liberal German MP3 manufacturers.

Once you're sick of listening to music, whip off the cap at the end of this player to expose its USB jack and voila, you now have a 128MB USB memory stick to fill with assorted bits of crap – provided you haven't already filled the 128MB of memory with Brittney's greatest mimes. This USB jack also makes it simple to upload songs to the player, removing the need for a custom cradle or cable to attach the player to your PC. Nice work Targa.

So this thing already has two functions, but it doesn't end there. Thanks to an in-built microphone, you can use this player as a voice recorder. The 128MB of memory can store ten hours of voice recording, but we found the quality of the recording to be only average, especially when compared to dedicated voice recorders. At least you know you can record voice if you ever need to.

If there is one fault of this device, it's the sound quality of the music playback, which is quite tinny, without much bass. The shocking headphones that are included don't help, and replacing these with a decent set resulted in much improved sound quality.

While the sound quality isn't quite top notch, the Targa TMU-306 is a well-rounded MP3 player with a decent amount of memory, all at an extraordinarily low price.

SPECIFICATIONS

128MB memory; MP3 and WMA support; USB memory stick and voice recorder functionality.

WEBSITE: Targa www.targa-online.com.hk
SUPPLIER: AKA www.akatech.com.au
PHONE: AKA (02) 9896 5688 **PRICE:** $249

7.5/10

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I GAMES I

Speak to me

Bennett Ring's going to lead you into the battle zone – so long as you don't mind reading in the midst of a firefight to find out what the hell he wants you to do.

There's no denying how much online gaming owns the single player genre – why else would Microsoft be jumping onto the multiplayer bandwagon with the Live service for Xbox? Mr Gates didn't make his gazillions by ignoring trends, you know. But there's an ever-increasing problem that is holding back this form of gaming, and it's not 3GB capped Internet accounts. Caps still suck though.

When the world started playing online, deathmatch and one versus one matches were the name of the game (not including MUDs) – who can forget their first bout of Quake, and the satisfying adrenalin rush of a well placed railgun shot? With the release of Team Fortress, and later Counter-Strike, team play started to shine as the most satisfying online gaming experience, and for good reason. It's one thing to rush headlong into battle on your own, packed to the brim with high explosives and grenade launchers, but doing it alongside intelligent team mates who can lay down cover fire or watch your back was a whole other experience. Nowadays it's hard to find an online game that doesn't have team-based play as its core experience: Return To Castle Wolfenstein, Battlefield 1942 and Counter-Strike are just a few of the most popular, with plenty more available. And yet, most of these games have a critical flaw that makes it very difficult for the concept of real teamwork to actually occur – communication and control.

When Team Fortress and Counter-Strike were first released, the only method a commander had for keeping in touch with his troops was the clunky text interface, and as a result a community of scripters was born, with a huge variety of text files containing pre-bound commands just begging to be downloaded. But even these required that the commander had the memory of an elephant equipped with recollection implants: it wasn't uncommon to have up to thirty different text commands bound to various keys, and pressing the wrong one at the wrong time would often lead to a team of bleeding corpses. Your team.

Battlefield 1942 has a better system, using the function keys to yell out various radio and shouted commands, but even this requires that the user memorise around forty or fifty different commands, which again requires much practice and/or Gingko injections. It even has commands specific to each map, so you can order your troops to attack the hill on Iwo Jima, or to defend the British HQ on Tobruk, a feature gamers have been yearning for years. Unfortunately this feature adds another twenty to thirty commands to the list that need to be memorised, and as a result don't seem to get used a whole lot.

What gamers really need to successfully operate as a team are two crucial elements, and there isn't a single game that has yet incorporated both.

First of these is voice communications. Counter-Strike and the Half-Life engine was one of the first games to ever incorporate voice comms that weren't totally buggy, incomprehensible or required a Telstra backbone to each user's house to work properly. Unfortunately, thanks to the various sound cards installed throughout the PC world, the issue of incompatibility hasn't been resolved totally, and so it's still quite uncommon to find a complete team within Counter-Strike all using voice comms (unless you happen to be playing for a highly organised clan). And since then, we haven't seen a single online game released with voice, which is disappointing to say the least. Of course, serious gamers use third-party voice comms applications, and our current favourite has to be the versatile Team Speak v2.0 (www.teamspeak.org). A slight problem with this package is the need to host a dedicated server, but once you have it set up correctly the organisational abilities of your team are sure to shoot through the roof. According to Peter Isensee, one of the leading tech gurus behind the Xbox Live service, voice has proven to be the most popular feature of Live in the States. You'd think it would be the ability to play against other people that gamers would be raving about, but apparently being able to abuse them is much more enjoyable than just shooting them. The fact that the Live service has better than telephone quality voice probably helps, including the fact that incompatibility issues are a thing of the past with this fixed hardware platform. Hopefully the success of the voice feature on Xbox Live will lead to a flow-on effect to PC games, but we're not holding our breath. The other feature that is desperately needed to promote team play is a commander role, as seen in Global Ops, and the recent Half-Life mod, Natural Selection.

This role sees a single player taking the role of a commander, presented with an overview of the battlefield and controls such as waypoint setting to help facilitate team organisation. America's Army incorporates a nice touch that boosts team play, by giving players who stick to their commanders a boost in accuracy, and this basic gameplay tweak has resulted in teams that always stick together. Considering how simple it would be to implement a commander role, and the benefits to gameplay it would bring, it's surprising that so few games have incorporated it. Oh well, at least we have Team Fortress 2 and its commander role, which will probably be released around 2046, to look forward to.

Team-based play is obviously the new frontier for online gaming, but as we've seen there are still a couple of features that desperately need to be implemented. And when it does, all we'll need to do is figure out how to properly deal with that annoying nine-year-old who thinks he's the next virtual Rommel. . .

James Bond 007: Nightfire

No amount of gadgetry can save this game in John Gillooly's eyes.

ABOVE: Shooting some dude with a P90. . . bang!

ABOVE: Breaking out of Dr Evil's elevator. . . crash!

ABOVE: Checking in with Moneypenny. . . hmm

Gearbox software has made a name for itself through its work in enhancing existing games. Be it with Valve on the Half-Life franchise, or with Activision on Tony Hawk 3, it has seldom put a foot wrong. Tony Hawk 3 proved that a PC conversion of a successful console franchise does not have to suck arse.

So much excitement has accompanied Gearbox's work on the much-delayed reappearance of James Bond on the PC. Designed for a simultaneous release on all consoles and PC, the game is primarily a first person shooter of the old school (the console version also includes action and driving sequences). The scene was set for fun. With gadgets galore, guns, Bond chicks, villains and a crack development team, the promise was huge and it was doubtful that this would ever be a bad game.

This heedy combination can only bring success – sort of. James Bond 007: Nightfire is not a bad game, just an incredibly average one. Maybe we have been spoilt by the recent release of the sleek and sassy No One Lives Forever 2, but Nightfire just reeks of been-there/done-that. The game opens with a very Bond-ish theme tune, complete with strangely abstract visuals. This then segues into the opening movie, in which an insanely accurate model of Pierce Brosnan parachutes from a plane into the middle of the action.

While the shock of realising that the voice actor playing Bond sounds nothing like Brosnan is left until the second bout of cutscenes, this first one demonstrates agonisingly well the lack of attention paid in the console porting. All the movies seem to be rendered at 640 x 480, appearing fuzzy and interlaced on the PC screen (and yet they apparently come out looking fantastic on the console versions).

You then land in the thick of things and come face-to-face with an engine that looks good – but not great. After being spoiled by the small touches and overall gorgeous looks of the Unreal Warfare and Lithtech Jupiter engines that have reared their heads of late, Nightfire seems to lack something. The visuals are functional and non-offensive, but as said, simply not great.

The next step involves sneaking into a chalet, which gives you your first glimpse at the enemy AI, and it is marvellously patchy. One good thing about this is that if you reach the point of frustration with a certain enemy you can simply watch his movements and remember them, as he will repeat them perfectly when you reload after death.

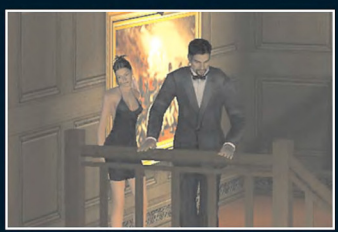
Apart from being mundanely predictable, the AI is also one can short of a six pack when it comes to detecting you, thus rendering any attempt at sneaking completely useless. Sometimes you can walk right up to an enemy, shoot your unsilenced gun at another enemy over the other side of the room and not have the guy near you flinch. Other times you'll poke your head around a doorway and instant gunfire will be returned. And then the gunman will stand there firing blindly into the wall, still aiming at you but too blindly stupid to realise that there is 50cm of reinforced concrete between your head and the muzzle of his gun.

The mind boggles that first person shooter AI can still be so average and mundane – years after games like Half-Life raised the bar. And the experience working with that fine example of AI should have rubbed off on Gearbox at some point or another.

This is not helped by the loose and crappy control system. At first glance it is your standard move, shoot, reload, jump, crouch kinda fare, but it translates poorly in game. The addition of lean controls are good, but in the end the fact you cannot lean while crouching, moving or even standing stock still at times renders them into the depths of irrelevance. Movement is imprecise and clunky, weapons just feel wrong most of the time and it is generally an unsatisfying experience all round.

Nightfire could have been great, and from all accounts the console versions are much better than this PC outing. Gearbox just fails to translate the game into anything more than a bog standard shooter on the PC, and considering we have already seen some stellar efforts in the past few months it slides well and truly into mediocrity.

6.5/10



GAME DETAILS

FOR: Bond, James Bond. Some interesting gadgets and goodies to play around with.
AGAINST: Poor AI; average visuals; clunky controls; and low quality movies.

REQUIREMENTS: 500MHz CPU; 128MB RAM; 16MB video card; and 1.2GB HDD
RECOMMENDED: 700MHz CPU; 256MB RAM; and 32MB video card
DEVELOPER: Gearbox www.gearboxsoftware.com
PUBLISHER: Electronic Arts www.eagames.com
DISTRIBUTOR: Electronic Arts www.eagames.com
PHONE: Electronic Arts (02) 9264 8999

World Rally Championship II Extreme

Those are mud skids on the backs of Dan Gardiner's pants. . .

ABOVE: A champion rear end.

ABOVE: Drink and drive & you're a bloody legend.

ABOVE: 'Dude, that's not the gear shift. . .'

The sheer volume of rally titles available on consoles these days is jaw-dropping, and we can already feel many Atomicans groaning 'Do we *really* need another one?'

Well stop your grumbling, chumps, because if the game in question is WRC II, the answer is a big fat 'Yes', dammit!

WRC II is the only officially licensed World Rally Championship title, and it incorporates most of the teams, cars and drivers from the real race. There's a range of game modes, from instant randomised races, the WRC itself, and customised rallies.

WRC II's sheer volume of tracks is astounding: there are over 100 of the things across 14 different countries. Amazingly, designer Evolution Studios has managed to keep most them distinctly different and original, and they're exciting to race on.

Tracks are comparatively long compared to the two-minute courses in CMR3, with an average race time of around three to four minutes with the occasional one stretching to five. It's therefore a little bit more of an endurance test than other rally games.

Learning to drive in WRC II is initially challenging. Handling feels significantly more realistic than in CMR3, and there's a large emphasis on accuracy. More so than most other rally games, WRC II is really about precision driving, and it doesn't leave much room for funny business. To excel, you need to listen closely to your co-driver to accurately gauge corners. It's vital that you stay on the track while maintaining an aggressive speed at all times.

The remorseless nature of the engine means that it's not as easy to just pick up and play as other rally titles, and for the uninitiated the first few races are likely to be more frustrating than enjoyable. The learning curve is also fairly steep: there's a significant step up between Novice and Professional game modes.

Novice can be mastered fairly easily after a few days' play, but Professional takes a lot longer to get the hang of, and Expert will most likely only appeal to the hardest of rally fans.

WRC II doesn't skimp on graphics either, with beautiful tracks, detailed cars and excellent weather effects. There are virtually zero pop-ups thanks to an outstanding draw distance, and the engine maintains an overwhelming level of detail at a respectable frame rate.

Weather doesn't seem to affect the handling to a great degree, but it still makes driving harder due to the fact that is seriously screws with your visuals.

Although both cars and scenery do take damage, WRC II's vehicles don't usually show it, and the car damage models are amazingly unsophisticated. To be able to see any form of structural damage (save for small things like broken headlight covers) you really need to trash your car repeatedly and frequently. It's possible to slam into walls, rocks and other obstacles up to ten times and still maintain a pristine, shiny and undented car.

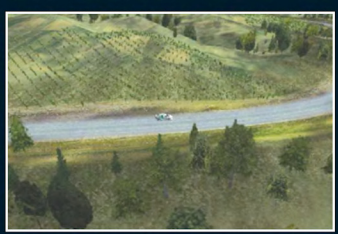
This is vaguely forgivable because WRC II encourages you to avoid hitting any obstacles at all, but it's disappointing none the less.

There are also one or two issues with the game's crash physics, and obstacles and scenery can be particularly frustrating. While it doesn't happen all that often, your vehicle can be brought from 180km/h to a complete standstill by even the smallest of rocks or wispiest of trees. Skating against a guard rail at top speed also has the annoying habit of suddenly halting your car and turning it sideways, stealing precious seconds while you reverse and straighten up before you can continue racing.

Airborne crashes are even worse, and oftentimes comedic. Flip a car and any notion you had of realistic physics goes straight out the window. Vehicles pirouette, roll and spin like some maniacal cross between a trapeze artist and a large, brightly coloured plastic hippo, and makes it very difficult to sustain the belief that these are in fact 1,200kg machines you're racing. It's unfortunate that the crash physics are so poor and unforgiving, as they stop this game from being a classic.

If you like to play fast and loose with your racing games, WRC II probably won't float your boat. With a little patience though, you'll find it to be a very rewarding game.

8/10



GAME DETAILS

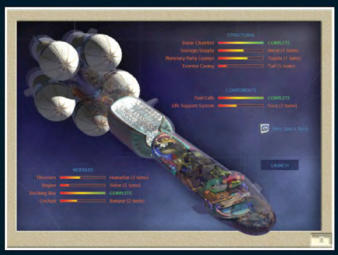
FOR: Deep, challenging and ultimately rewarding, not to mention it has a shitload of tracks and cars to boot!

AGAINST: Crash physics are simultaneously humorous and frustrating; car damage modelling is comparatively poor.

DEVELOPER: Evolution Studios www.evos.net
PUBLISHER: Sony Computer Entertainment www.au.playstation.com
DISTRIBUTOR: Sony Computer Entertainment www.au.playstation.com
PHONE: Sony Computer Entertainment (02) 9324 9500

Civilization 3: Play The World

John Gillooly discovers the best way to spend 12 hours with a close friend.



ABOVE: An old victory mode re-appears in PTW

ABOVE: It's The Bomb! Da Bomb! Le Bomb!

ABOVE: Wiping out the Mongols is harder than ever

Multiplayer has never been done well in the Civilization series. Inherent to the turn-based strategy genre are long periods of waiting around and games that take umpteen times longer to finish than their realtime cousins. Civilization 3 was released without any multiplayer support, hence, the new expansion pack Play The World.

Whenever such a beast is announced, you cross your fingers and hope that the end result will enhance the game, rather than just add a couple of new units and maps. Thankfully Play The World enhances Civilization 3 across the board. Be it single or multiplayer, there are changes designed to destroy even more hours of your spare time.

As a starting point, Firaxis has added eight new Civs for you to control, each bringing its own special units to the table. Thought has gone into creating Civs that offer a unique experience, rather than a different leader graphic. For example, the Scandinavians have a Berserker unit that bears the same amphibious quality as the Marine, which allows it to attack from ships to faithfully represent classic Viking-style combat.

Other major unit changes have been designed to stop the upgrade dead ends that units such as swordsmen and warriors eventually hit. Included now are medieval infantry and guerilla units to help your basic fighting units keep up with advancing technology. The same comprehensive unit commands are still in the game, however in the original these commands were hidden deep in the Civilopedia as a list of hot keys. Firaxis has now added icons for these commands, changeable through the preferences menu, which mediates the need to memorise extensive shortcut key lists.

Tech has been slightly tweaked, making new wonders and improvements available. New wonders include the Internet, which puts a research lab in every city. You can also now build airfields, outposts and radar towers out in open terrain to further strengthen your nation's defense. Espionage has been revamped, and now all actions, from building embassies to sabotaging production, are accessible from one simple menu interface.

All these enhancements work beautifully, integrating into the game seamlessly and making it different enough for the time-sucking Civ 3 addiction to set in once more. In order to fuel that addiction, and complement the newfound multiplayer, Firaxis has not only enhanced the game editor, but created sample scenarios and new tile sets for the community. Also included is a set of community-created scenarios, finally supplying Civ 3 with a decent Earth map right out of the box.

Multiplayer is a peer-to-peer affair, where one person hosts and others join from the start. Firaxis created a turnless mode to shorten game time, in which the turn counter resets after a specified period, and gets longer as civilisations get more complex.

It is a tradeoff, as the timer does force everyone to make their moves quickly, but in the early building stages of the game, when all you want to do is wait until the next unit is built, the wait can seem interminable. Thankfully, there are many game modes designed to facilitate faster multiplayer gaming and get around these problems.

Many are variants on games popular in other multiplayer realms. Capture the Princess is unsurprisingly reminiscent of Capture the Flag, the goal being to nab the opposition's princess unit from their capital and get her back to yours. Regicide is another mode, which makes for varied gameplay. In this mode you have a few low stat king units that must be defended. You can choose how you defend them, either gathered together in one stronghold or hidden in cities throughout your empire. This not only makes for tactically different games, it increases the role of things like diplomacy and espionage as you search for kings in your opponent's cities.

Play The World is indeed an expansive expansion. Firaxis has taken one of the finest turn based strategy games and made it better. New units; new tech; new maps; new game modes; new scenarios; new multiplayer – it's all there. It is rare for an expansion to deliver such comprehensive enhancements, but Play The World manages to make Civilization 3 even more amazing than before.

9/10

GAME DETAILS

FOR: More of everything that made Civ 3 so special, plus innovative new multiplayer modes.

AGAINST: Music ranges from pleasant to execrable.

REQUIREMENTS: 300MHz CPU; 64MB RAM; 500MB HDD
RECOMMENDED: 1GHz CPU; 256MB RAM
DEVELOPER: Firaxis www.civ3.com
PUBLISHER: Infogrames www.infogrames.com
DISTRIBUTOR: Gamenation www.gamenation.com.au
PHONE: Gamenation (02) 8303 6800

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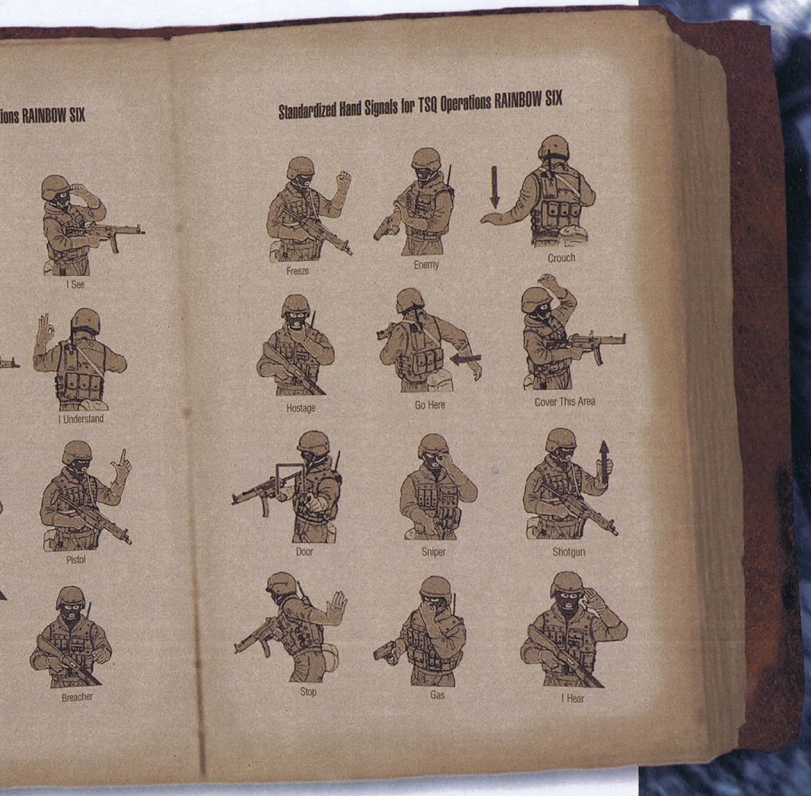

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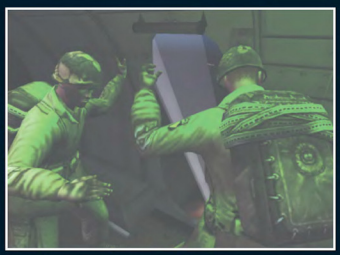
Medal of Honor: Allied Assault: Spearhead

Dan Gardiner just wishes that it was a little bit longer – the game that is. . .

ABOVE: Team work is integral in Spearhead. . .

ABOVE: . . .As is killing lots of Nazis



ABOVE: Get out the door already, ya mug!

If the original Medal of Honor: Allied Assault borrowed selectively from *Saving Private Ryan*, the new Spearhead expansion pack could almost be called *Band of Brothers: The Game.* The first two-thirds of Spearhead pay homage to the recent TV series in a spectacular fashion, fusing the best of *BoB* into a supremely playable experience.

The game starts with one of the most excellent events we've seen in modern gaming: a parachute jump out of a burning plane into enemy territory. While it's only an in-game cutscene, it's a great scene-setter.

In Spearhead you play as Sergeant Jack Barnes of the 101st Airborne. Your missions take place across Europe; in the hills of Normandy just prior to the boat landings on D-Day; in snow-covered, mortar pounded forests; and deep in the ruins of Berlin.

Missions are widely varied and generally lots of fun. In many ways, Spearhead takes the best parts of Allied Assault's single player experience and refines them even further.

A significant improvement is the inclusion of large squad-based battles. These are damn cool to participate in, as you rush headfirst into half a dozen Nazis with your weapon blazing, your squad-mates keeping pace and picking off enemies as they go.

It's somewhat ironic that while Spearhead was developed by a different design house than MOH:AA, it still suffers from many of the same problems as the original. Scripted events are still at the core of the game; sometimes they work well, other times they're about as obvious as Bennett is horny (which is to say, disturbingly so). It's not that we mind scripting – it's just that its effectiveness depends on how noticeable it is.

Also like the original, playing through on hard is primarily about knowing exactly what to expect from scripted enemies then figuring out a way to overcome it – and trying again and again until you get it right.

The story is fairly disjointed, and there's not much of a sense of continuity between missions. It's frequently unclear exactly why Sergeant Barnes is where he is, as there's no narrative that links the missions. One minute you're in the thick of the Ardennes forest in France, the next you're in the heart of bombed-out Berlin.

Both squad-mate and enemy AI is generally good, but never really outstanding. Squad members mostly behave themselves but don't display much intelligence. They still occasionally wander too close to an explosive you've just placed, or run into a house full of machine-gun toting Nazis – with their resulting death forcing you to reload.

There were one or two annoyances in MOH:AA that have thankfully been removed from Spearhead. Gone are the frustratingly accurate Nazi soldiers – you know, the ones that could pick you off from a thousand paces with a flintlock pistol. Nazis are now more varied in their accuracy, and will frequently have to fire off a couple of rounds before zooming in on your position.

The sheer brevity of the single player game is Spearhead's main weakness. Most people who've finished Allied Assault should be able to breeze through the three missions (nine levels all up) in an evening or two of dedicated playing.

Multiplayer helps to redeem the shortness of single player somewhat, and introduces 12 new maps and a superb new game type called Tug of War.

ToW works in a similar fashion to Conquest in Battlefield 1942, although it's a little more involved. Rather than just holding a series of points, each team must attempt to complete a set of objectives, such as closing an important gate into a village, or holding onto a piece of artillery. Each objective shows up as a dot on your compass so it's easy to find, and it's a lot of fun scrambling around trying to complete the tasks.

Sadly, there were very few active local servers when we played online, and we mostly had to put up with pings above 200ms.

Overall, Spearhead is a little mixed. The majority of levels are beautifully constructed and even slightly better than those in the original. The new multiplayer maps and ToW are Spearhead's saving grace, but most people won't be able to play them extensively because of the lack of local servers.

6.5/10

GAME DETAILS

FOR: Takes the best of Allied Assault's single player game and makes it even tighter.

AGAINST: The briefness of the game doesn't really warrant the $50 price tag.

REQUIREMENTS: Original MOH:AA; PII 450MHz CPU; 128MB RAM; 16MB OpenGL video card.
RECOMMENDED: PIII 700MHz; 32MB video card.
DEVELOPER: EALA www.eagames.com
PUBLISHER: Electronic Arts www.eagames.com
DISTRIBUTOR: Electronic Arts www.eagames.com.au
PHONE: Electronic Arts (02) 9264 8999

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Need For Speed: Hot Pursuit 2

He feels a need, but John Gillooly is not sure what for.

ABOVE: Head-to-head racing in expensive cars. . .

ABOVE: . . .can result in huge insurance claims. . .

ABOVE: . . .unless you manage to fly from the cops.

Deep among the countless console racers released over the years lies the much talked about sentimental favourite Need For Speed. While each release in the series has met with different reactions, there is a strong theme carrying through all the games: fun fast racing with a slight arcade bent.

Need For Speed: Hot Pursuit 2 returns to this, with the basic premise revolving around high-speed police chases in some of the tastiest super cars on the face of the planet. The game is split into two major modes: the aforementioned police chase tomfoolery and a straight racing mode.

Both of these game modes feature a campaign of sorts, where you work your way through a series of missions, unlocking more tracks as you go and raising cash to unlock new, faster cars. Accompanying these are some single race missions and a few split-screen multiplayer modes.

Two major features have set NFS apart from the rest of the racers, and they have returned again in Hot Pursuit 2. High speed driving is what NFS is about, and like previous games, the brake is rarely used as you fang some of the nastiest road machines around sweeping country roads.

The other standout has been EA's use of the graphical power behind the consoles, and Hot Pursuit 2 manages to squeeze some the slickest looking graphics we've ever seen out of the PlayStation2.

Gorgeous graphics pervade all aspects of the game. Little touches such as a bushfire raging on the side of one track, lowering visibility and filling up the roads with pesky parked fire trucks, or the funky slow motion replays of particularly overblown jumps all merge beautifully to provide a complete visual package.

This straps on to a fun driving model. Do not expect Gran Turismo levels of physics however, as they are tweaked for handling under speed. This makes for breakneck racing and a surprisingly large amount of plowing into walls when a tight corner does pop up, ruining the Zen-like 200km/h twitch steering that your sub-consciousness has been perfecting. It is pure high-speed fun made all that more tense by the presence of both traffic and the local constabulary in Hot Pursuit mode. And from experience, the traffic usually pops up just when you drift to the wrong side of the road on a top speed corner.

Cars vary from Lotus Elise and AMG Mercedes level, all the way to the Ferraris, Porsches, Lamborghinis and MacLarens that appear later in the progress tree.

The special guest appearances made by the HSV Commodore and Ford Falcon in the original Hot Pursuit have been followed up with the inclusion of the HSV GTS Coupe and Ford TS-50 in this version. Unlike the original, there are no cop variants of the HSV.

The cops in Hot Pursuit 2 are much nastier than they used to be. Besides roadblocks and spike strips, the cops now have helicopters that fly just ahead of you, dropping large explosive barrels designed to slow your progress. The assortment of cars available to the cops has significantly increased and it is rare that you will find yourself in a car capable of outrunning the police completely. Instead you have to employ a combination of tidy driving and clever use of shortcuts to get them out of your rearview mirror.

Multiplayer is a fairly standard split-screen racing affair. Unfortunately, the game appears to lack any option for cop car versus normal car modes, which would have added a huge draw to the multiplayer. But after trawling the game interface screens for ages, there still seems to be no way to do this.

For the modes that *are* there, you will find that the speedy gameplay is perfect for long trash talking battles on the couch.

Need For Speed: Hot Pursuit 2 is fun, but there is no real depth to it. It is a perfect racing game for killing an hour or so every now and then, but when compared to other offerings for the PS2, it falls behind. This doubtful longevity keeps it from greatness, like many games of this style, but if you're after a fun, good looking, and above all, fast racer for the PS2 – or maybe just want to practice evading the police – then this is a great offering.

8/10

GAME DETAILS

FOR: Fun, fast arcade racing action for speed freaks who want to get behind the wheel and fang it ASAP; great for short-term gratification.

AGAINST: Lacking multiplayer modes, such as Cop versus Cannonballer, and therefore hampered in its longevity.

DEVELOPER: EA Games www.eagames.com
PUBLISHER: Electronic Arts www.ea.com
DISTRIBUTOR: Electronic Arts www.ea.com
PHONE: Electronic Arts (02) 9264 8999

Sega GT2002

Gentlemen, start your engines, and please try not to run over Bennett Ring.

ABOVE: Depth of field effects make for great replays.

ABOVE: Like a lotus flower, except with fuel injection.

ABOVE: What? No cell-shading?

When it comes to realistic racing games, Gran Turismo 3 is widely acknowledged as being the ultimate title for the genre, and is probably one of the reasons that the PS2 has become as common as lint balls in the belly buttons of guys with hairy stomachs. So it's no surprise to see that the Xbox now has its very own clone, oops. . . *rival* of this game, with the release of Sega's GT2002.

One of the great things about GT3 was the huge variety of cars just begging to be thrashed around the track, and Sega GT2002 emulates this with over a hundred licensed vehicles that you'd probably never be able to afford in real life. Classic cars from the 1970s are probably all you're going to be able to afford at the start of your career, but you'd be surprised how fast these things can go when they've had a little tweaking under the bonnet. Each of the cars is upgradeable via the cash you earn through special event races, and you definitely need to whack in some of these racing-tuned parts if you're going to have a chance in the higher leagues. These parts can be bought either second-hand or brand new, with second-hand gear having a tendency to fail at the most critical moments. For those of you who like to play virtual grease monkey, the lack of tuning options will disappoint.

Once you've earned enough moolah to purchase a new beast, you can put your old car up for sale, but unfortunately the selling price doesn't reflect any additions you've made. So you could spend $50,000 on a car and new parts, and end up having to sell it for $15,000, which sucks pretty hard.

There are two main modes of races in the main career mode of Sega GT2002: Official races, which must be won to progress through the different licenses; and Special Event races, which reward you with bucket loads of cool hard cash.

While this system works fairly well, it's not without a major flaw, as we discovered. After completing many of the event races and making our 1980s Mazda RX-7 a beast that even a high end Porsche would have nightmares about, we decided to sell our hotted-up rotary monster to buy something new. Unfortunately we made the fatal mistake of purchasing a Lancer Evolution and didn't have enough cash left over to buy any upgrades, making winning one of the advanced races as simple as pole-vaulting the Empire State building with a chopstick. The end result was that we had to scrap the entire career we'd spent days building up, and start again. Fun? No. Incredibly infuriating? Yes.

The handling of the vehicles within Sega GT2002 is superb, easily up there with the best racing games on any platform. Just make sure you turn off the traction control and anti-lock brake settings, or else you'll be wondering why the game feels so darn arcadey. The visuals aren't too bad either, with immaculate car models and quite detailed scenery. However there is a major problem with filtering. Thanks to the use of a depth of field blurring effects, there is a noticeable 'barrier' as graphics sharpen when they get close, with a very annoying flickering effect as objects pass through this barrier. It's quite horrendous at first, but you'll soon learn to ignore it. Due to this depth of field blurring, race replays look incredibly realistic, and are a likely candidate for finest replays ever seen in a game.

A very cool feature of the game is its Chronicle mode, where you get to race in classic cars from the 1970s and 1980s, with a sweet-looking sepia effect over the graphics as each race begins, which gradually fades out to full colour over twenty or so seconds. Instead of using cash to upgrade your car, in this mode you're allowed to upgrade a single section for each victory you score.

Time for the obligatory music sentence, and boy does the race music within Sega GT2002 bite the big one. This is unforgivable considering how good game music is getting these days, especially on DVD-laden consoles. Oh well, at least you can turn it off.

While the meat of Sega GT2002 is quite tasty, it's let down by a couple of major cheesy flaws, and as a result doesn't come close to the GT3 experience. That doesn't mean it's not worthy of your attention, but be prepared for a couple of really annoying faults that will tarnish your overall enjoyment of the game.

8/10

GAME DETAILS

FOR: Luscious car models; brilliant car handling; and more cars than John Laws could include in a Valvoline advertisement.

AGAINST: Flawed career mode; annoying and unnecessary graphics flickering; and possibly the world's worst in-game music.

DEVELOPER: CWow Entertainment www.wow-ent.co.jp
PUBLISHER: Sega of America www.sega.com
DISTRIBUTOR: Infogrames www.infogrames.com
PHONE: Infogrames (02) 8303 6800

Quantum Redshift

Yes, that was Bennett Ring flying past in a 1500 km/h racer. Wheeeee!

ABOVE: Particle effects are heavily used throughout.

ABOVE: Water so real you'll want to take a dip.

ABOVE: We have lock...let's blow this punk to hell.

If you want the ultimate in speed, even today's F1 cars pale into insignificance when compared with the vehicles that will be smashing into walls a hundred years from now. This is why sci-fi racing games set in the future have given racing fans a speed rush above and beyond any of the more realistic racing genres. Quantum Redshift brings this tradition of insanely high speed racing to the Xbox, but can it live up to the awe-inspiring high standards set by Wipeout?

The vehicles you'll approach light speed in are known as SPARCs (Single Person Armed Racing Crafts), and like the beasts in Wipeout, hover a couple of feet above the track thanks to the wonders of a couple of anti-gravity engines. While the models of these vehicles are much more detailed than anything you'll see in Wipeout, the overall design isn't quite as industrial, but the fact they're so detailed (such as the engine pods changing positions depending upon the surface you're over, and the highly detailed cockpits complete with strapped in pilots) makes up for their slightly girly looks. There are a total of 16 SPARCs and accompanying pilots, each with very different weaponry and handling, which can be upgraded with the cash you win in each race. Only eight of these vehicles are initially available, as each pilot has an archrival that must be destroyed to unlock access to the other eight vehicles. The concept of archrivals adds a little variety above the standard 'place first, dominate the world' type of racing found in other racers. You'll race against six other vehicles during each race; unfortunately the AI piloting these doesn't stand out as anything too special.

Like any futuristic racer worthy of your time, QR is full of powerups that affect three different systems on your SPARC: defensive shields, guided weapons, and unguided weapons, each with three levels of power.

The racing takes place over 16 different tracks, ranging from high-rise suspended courses to those in the middle of vast deserts, with plenty of vertigo inducing drops and cool bits like loops and jumps to help fill your pants. Other reviews have panned the tracks for being bland and sterile, but I have to disagree, being very impressed by the overall panache found in each. These tracks can be played at four different speeds: amateur, expert, master and Redshift. At amateur and expert speeds, novice gamers should find it a breeze to complete a lap without even scratching their paintjob, but once you hit the 1500+ km/h speeds of the Redshift league it's a whole other matter, requiring a photographic memory of every corner to even have a chance of placing in the top three, let alone winning. In fact you'll find that at the higher speeds you'll be fighting the track more than your opponents, requiring mastery of the SPARC's powerslide feature. This is another complaint many other reviewers have made about QR, saying that it's near impossible to cleanly finish a track at the higher speeds, but take it from us that these guys just need to learn how to get intimate with their SPARC.

The onscreen action purrs by at 60 frames per second, even when playing four-player split screen mode (which by the way is a total hoot), a remarkable achievement considering how gorgeous the game is. Extensive use of bump mapping on the tracks lends them a very realistic look, while reflection maps on both the tracks and vehicles help add a bit of pizzazz. Water effects are simply stunning, especially the beading of water drops on your windscreen after you've given your SPARC a dunking. In all, the visuals are gorgeous, and really make the most of the grunt of the Xbox – something that most games published by MS Game Studios seem to nail. Audio is also great, with a pumping techno soundtrack created by JXL, the creator of the Elvis remix *A little less conversation*, while the vehicle and weapon sound effects will definitely rock your couch in true 5.1 surround.

All of the different components of QR are hard to fault but sadly there is something lacking to bring it up to the level of the Wipeout series. Thanks to the work of Designers Republic, Wipeout had a level of sheen that's still hard to beat – and Redshift's design team was unable to match it. That said, Quantum Redshift is still a great game in its own right, and worthy of your attention.

8.5/10

GAME DETAILS

FOR: Amazing visuals fly by at a constant 60fps, even in four-player splitscreen. Completing the 16 courses with each of the 16 racers at four different difficulty levels will take you months.

AGAINST: While everything comes together nicely, somehow QR still ends up feeling a little soulless, and as a result some racers might tire of the game quickly.

DEVELOPER: Curly Monsters www.curlymonsters.com
PUBLISHER: Microsoft Game Studios www.microsoft.com/games
DISTRIBUTOR: Microsoft www.microsoft.com.au
PHONE: Microsoft (02) 9870 2200

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XGP

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Corsair XMS 3500 DDR CAS-2
Hercules 9700 Pro 128Meg 8X AGP
Digital 5.1 - S/PDIF in/out Interface

2 X Western Digital 100 Gig JB HDD's
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Ricoh MP 5125A DVD+R/+RW

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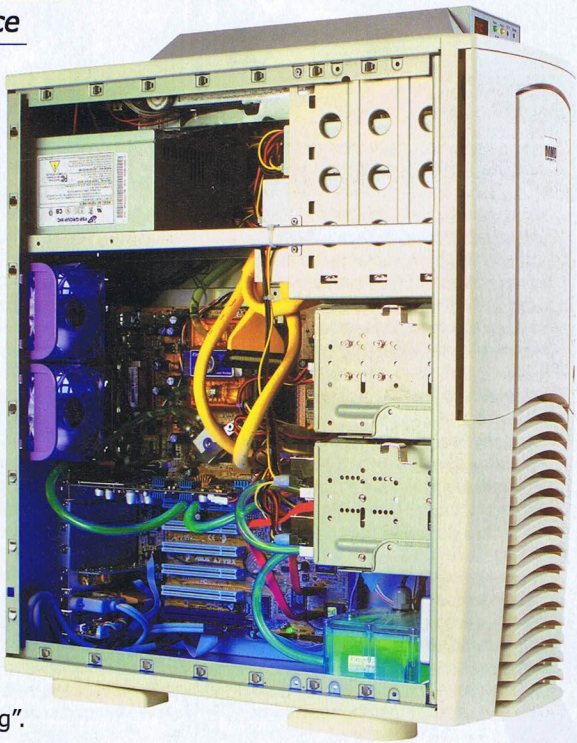


System comes with onsite installation and 1 hours training courtesy of "Quick Knowledge".

System comes standard with 12 months onsite warranty courtesy of "United Electrical Engineering".

X Gamer Pro Systems are available from most local PC resellers. If not tell your local PC reseller to contact MMD.

RRP $5995.00 Inc GST

www.mmdcomputers.com.au/xgp

MMD Computers Pty Ltd

7 Ross St, Newstead Queensland 07 3252 4009	1/100 Munibung Rd, Cardiff New South Wales 02 4953 6211	28 Phillips St, Thebarton South Australia 08 8443 6611	252 Argyle St, Hobart Tasmania 03 6231 0554

The quoted price is inclusive of GST. Pricing does not include freight. Please contact MMD for a reseller close to your location. All brands and products are trademarks of their respective companies. Product pictures for illustrative purpose only. AMD, the AMD Arrow Logo, AMD Athlon, and combinations thereof are trademarks of Advanced Micro Devices, Inc. Microsoft and Windows are either registered trademarks or trademarks of Microsoft corporation in the United States and/or other countries. Warranty services handled by United Electrical Engineering (UEE), please contact them on 1300 724 202 for further information. Errors and Ommisions excepted.

Star Fox Adventures

John Gillooly gets into a Rare gem for the GameCube.

ABOVE: Of Lylat Wars fame, Fox McCloud is back.

ABOVE: Yes, it's the letter 'A'. Any more questions?

ABOVE: Fear the Staff of Glowing Purple Sprite Doom.

When talking to long term Nintendo fans, mention of British studio Rare conjures up a mix of sentimental longing and a deep sense of loss. Rare has been a stalwart developer of games for Nintendo's platforms for some years now, and after a recent acquisition by Microsoft and a shift to Xbox development, Star Fox Adventures will go down as the last great Nintendo outing of Rare.

Star Fox Adventures began life as a completely original game called Dinosaur Planet, with the return of Fox McCloud and his cohorts from the Lylat system, last seen in the game Lylat Wars on the Nintendo 64. However the Star Fox franchise was shoehorned onto the game at a relatively late hour, and while it does not suffer from this, it is a very noticeable aspect.

As the game begins, Fox and his crew are hired to help save the Dinosaur Planet from being torn apart as a side effect of the Tyrannous rule of General Scales of the vicious SharpClaw dinosaur tribe. Planet saving in this case involves a healthy dose of 3D-platforming action, interspersed with action-packed flights between the chunky chunks of Dinosaur Planet in your spaceship, the Airwing.

Over the course of the game you come into contact with various Dinosaur species, most of which are out to help you save the planet. Early on in your journey you are joined by the slightly annoying but invaluable Prince Tricky of the EarthWalkers, who can be called on to help achieve objectives that are beyond the ability of Fox McCloud.

In one of the more dramatic departures from previous games, Fox is armed not with a blaster but with a magical staff, left for him by the mysterious cat creature Krystal, who was imprisoned while trying to save the planet. The staff is used not only for smacking unsuspecting SharpClaws on the head, but also for other multipurpose tasks as the game progresses and you uncover more staff powers.

Early on these include a fireball that you can shoot from the staff, and a rocket boost that can be used in certain places to get to inaccessible areas of the levels.

The control system for Star Fox Adventures is well-refined and highly effective. Drawing on the system used for the Legend of Zelda series on the N64, control is highly intuitive, with the left analog stick used for movement, the right control stick for issuing commands and accessing your inventory and buttons used for several purposes.

Similarities with the control system extend as far as the inclusion of an auto-jump feature when you approach an edge.

For those who have not experienced this it is an amazingly effective technique – you still need to control your jumps, but it takes a lot of the traditional jumping puzzle frustration out of the equation.

All of this fits seamlessly into the most graphically outstanding game to yet grace the GameCube. Fox himself is a work of art, with highly detailed fur that would make an NVIDIA demo coder proud and slick animation to match. In fact, the entire look of the game is way beyond what any of us expected the Cube was capable of.

The dinosaurs that you encounter are a diverse bunch, and have been rendered with a unique character and personality all of their own.

This even extends to the cutscenes, which are some of the most stylish out there and are a pure joy to watch.

The game just reeks of quality from every pore, and with at least 20 hours of solid play ahead for even the most side quest ignorant gamers, it offers a serious challenge and great value.

Gameplay, although great, can sometimes fall into the retracing your steps trap, but the story keeps things bubbling over and you'll soon find Fox venturing further and further from the villages that occupy the early part of the game.

Some people may have been concerned that the mix of original game and franchise would have ruined the experience of the game. But you can happily cast those blues aside, for Star Fox Adventures may be Rare's last outing on this medium, but it's well done, and well worth a play.

9/10

GAME DETAILS

FOR: Good fun platforming action with the finest graphics to yet grace the Cube. Rare goes out with a bang.

AGAINST: Some confusing puzzles; occasional bouts of backtracking; Rare's last hurrah for Nintendo so poor chance for a sequel.

DEVELOPER: Rare www.rare.co.uk
PUBLISHER: Nintendo www.nintendo.com.au
DISTRIBUTOR: Nintendo www.nintendo.com.au
PHONE: Nintendo (03) 9730 9822

Mechwarrior 4: Mercenaries

Robot flaming death is always good, but George Soropos wonders if flaming death is enough.

ABOVE: *Atomic* green is the colour of war

ABOVE: Not much left to destroy. . .

ABOVE: Take that, oil rig!

Mechwarrior 4: Mercenaries is the latest installment in what is now the longest running computer game series of all time, and a nod back to Mechwarrior 2: Mercenaries, which is probably the serie's most highly regarded episode. Mercenaries breaks from tradition by giving the player far more choice over their allegiances, missions, equipment and support and therefore hopes to be a more immersive experience than the standard Mechwarrior titles. Unfortunately this doesn't really turn out to be the case.

From the outset you are told that the 'style' of gameplay will be affected by your choice of mercenary sponsor due to the different resources and capabilities, but this isn't quite true. There are a few unique missions for each sponsor but not enough to justify that claim by any means. The single player missions themselves are really quite basic in design, with most being a matter of moving to each waypoint and killing everything that moves. There are very few surprises in store for those looking for some original mission design.

When you begin your career the Galaxy is a rather empty place with only a limited number of possible destinations. As your reputation builds more worlds offer contracts to your team and more destinations become available. There is one unique world among the others, Solaris VII, the home of gladiator-style arena combat. There are three divisions and several battlegrounds, winning all of them will earn you a tidy sum and a swag of Pele-style sponsorship offers for firming lotions.

Mercenaries also boasts ten new 'Mech designs and some powerful weapons to add to your arsenal. These add some fun to online play, especially for those bored with the game after a year or so of it being on the market. The new 'Mech types are spread evenly between classes, while the new weapons lean a lot towards the BFG philosophy of gun design. The Cluster Missile for example is perfect for taking out swarms of ground pounders or slowing down a whole lance of light 'Mechs in one hit. The new Heavy Gauss Gun can hit like a Clan AC20, but at a range of 600 meters instead of 350, and a much longer reload time. The rotaries are the best however – like hard hitting machine guns they are fun to use and very effective.

On the subject of online play the developers at Cyberlore haven't really added much at all to the game. Apart from the new chassis and weapon types there is in fact nothing new. A new online game type that reflects the mercenary nature of this expansion should have been included. Many online players have also been dismayed at the inclusion of the Longbow class Mech, a specialist long range artillery unit, and the annoying effects it has on gameplay: namely players sitting at standoff distance blasting everything that moves.

The Mechlab interface is largely unchanged from the earlier incarnation of the game except for the fact that repairs to damaged 'Mechs now take one or two weeks, during which time the 'Mech is unavailable for combat. This means that the player needs to always keep a few 'Mechs in reserve. One significant change to the game is the number of Lancemates available to help out on missions, and the quality of the AI controlling them. Mercenaries allows you up to six Lancemates and they are actually (for the first time since Microsoft took over the franchise) worth having. No longer do they stomp on your toes, blunder into your line of fire or do the chicken dance behind buildings – they actually help.

In most aspects Mercenaries has done a reasonable job of living up to tradition, however as a game that has always been at the cutting edge of technology Mercenaries falls a bit short when compared to earlier versions. The game engine is now over two years old and shows it. The graphics are quite dull, particularly the terrain, and the audio is also rather disappointing in its lack of intensity. The other last point we have to make is the overall value of the product. There isn't really a lot of gameplay time in Mercenaries, the campaign is quite short and considering the developer's use of an established game engine Microsoft should have considered selling this at a budget price.

7.5/10

GAME DETAILS

FOR: New 'Mechs and weapons; choice of allegiances and missions.

AGAINST: More of the same old thing in terms of gameplay; aging game engine.

REQUIREMENTS: Win98/ME/XP; 128MB RAM; PII 700MHz; 1GB HDD; 16MB video card.
RECOMMENDED: 256MB RAM; PIII 1GHz; 64MB video card.
DEVELOPER: Cyberlore www.cyberlore.com
PUBLISHER: Microsoft www.microsoft.com\games
DISTRIBUTOR: Microsoft www.microsoft.com\games
PHONE: Microsoft (02) 9870 2200

Smokeless

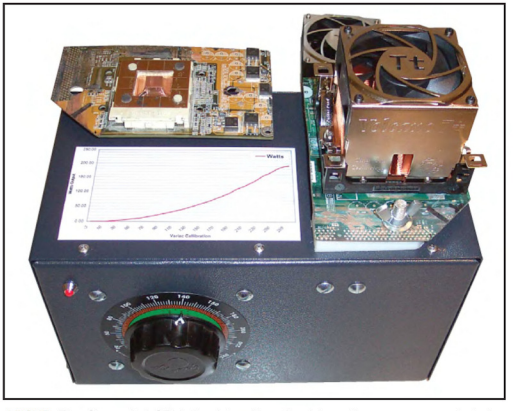
It's pleasing in a way that Atomicans send in i/o letters. It is a common mis-conception that *Atomic* readers know all there is to know about PCs and tech. Seeing these letters shows that Atomicans are able to display the humility needed to admit ignorance in certain matters. Like our IOOTM winner Alan, an i/o participant, who has earned a Logitech MX-500 shinymouse for his contribution to humanity.

IOOTM: Cooking with chips

Your comparison of heatsink/fans for the Pentium 4 and the Athlon was interesting enough but for one major exception, and that is your baseline room temperature. Only in the depths of winter do I have anything in the order of your 20 degrees; in summer I'm lucky if the indoor temperature is in the mid-30s, and sometimes it's higher (outside is a lot hotter than that).

I generally find that I must go to considerable effort to keep my computer stable in summer. Not all of us have the luxury of air conditioned buildings, so how about including some extreme conditions in your testing to give a more real world appraisal of what is being tested?

Alan Wilkinson



ABOVE: The Chernobyl CPU simulator. You should see the names we rejected.

You can apply the numbers from the big comparison in *issue 23* to any ambient temperature easily enough. Just take into account the difference between the ambient temperature you're dealing with – 45°C, say, for the temperature inside a computer case on a hot day – and our 20°C test temperature, and add it to the result. So a cooler that scored, say, 59°C at 20°C ambient, would score 84°C at 45°C ambient. There's not actually a lot of point to doing this, though, because the 'Chernobyl' test rig's results aren't directly comparable with CPU results.

Like all 'CPU simulators', the *Atomic* rig just provides a basis for comparison, so you can see what cooler's better than what other cooler and by how much. The only thing that behaves exactly like a CPU is a CPU, and different CPUs have different heat outputs, even before you start overclocking. CPUs are also inherently uneven heat sources in computers that do real world tasks; they'll be hotter when they're doing some jobs than when they're doing others.

If you need a cooler for use in hot conditions, you should simply buy the best-scoring one you can lay your hands on. Provided the cooler's installed properly and the case ventilation is good, you should be able to keep your computer stable up to around 40°C room temperature without any trouble.

If your PC gets flaky when it's hot, bear in mind that the CPU cooler isn't necessarily the culprit. Overheated chips on the motherboard or expansion cards for example may be at fault.

A simple but less than totally elegant solution for heat-wave computing is to take off the side of the case during scorching weather and aim a desk fan into the computer's guts.

Un-RAIDable?

In *issue 17*, in the 'Speed for the masses' article, you mentioned that when two Seagate Barracuda IV drives were in a RAID setup '. . . they scored far lower than a single Barracuda IV drive'. In the words of Timon the Meer Cat: 'What's goin' on here!?' You see, I have one 80GB Barracuda IV, and was planning on buying another for a RAID 0 setup, but since reading *Atomic*'s advice – '. . . if you plan to RAID, don't rely on the Barracuda IVs' – my hopes for increased speed were suddenly vaporised.

Has Seagate jibbed a few hundred dollars off unsuspecting customers by producing drives that cannot be used with RAID?

Is there any way to resolve this problem? Has Seagate done anything? Do you really mean that I have to live without the extra speed boost of RAID 0? Say it ain't so.

Simon Vuu

According to Seagate, the Barracuda IVs are just too darn fast for RAID.

Helpful reference (including much Seagate we-are-cool-we-are-bad-arses-speak):

www.viaarena.com/?PageID=80

Crossover incompatibility?

Are Ethernet crossover cables guaranteed to work in every situation?

Bear-Dog comes online one day saying that he has two network cards joined with a crossover cable, but they can't see each other on the network.

In spite of network troubleshooting attempts, he is unable to get the machines going. I told him I am 100% certain that long ago, either *Atomic* or *PC Authority* ran an article on small networks, and they touched on this very issue. The article basically stated something to the effect of not all cards supporting the use of a crossover cable.

The reasoning (from memory) was something to do with the way the cards physically release the signals onto the network media.

The use of a hub or switch eliminated the problem, as these devices HAD to comply with some standard, but the cards did not. However I haven't been able to find any information about this particular issue.

Darrkon

This is one of those things that usually gets hand-waved past the audience with a bit of mumbling about 'timing issues'. It's not curable: some NICs just don't like crossover cables, particularly at 100BaseT speed.

The majority of everything on the retail shelves at the moment should be fine with a crossover cable, though, provided the cable isn't ludicrously long or badly made.

This includes super-budget network cards.

So if you have problems with crossover cable compatibility, the simple solution is to just drop a dirt cheap new NIC into the machine.

Wireless town

Hey. I have been getting very frustrated with my home networking setup as I am always moving cables and other networking paraphernalia around the house (not to mention to and from LANs) and it all gets very cluttered, tangled and just damn in everyone's way.

After reading about different wireless setups I am considering going wireless. Is it possible to use some sort of amplifying equipment and an aerial to create a wireless network across a large area (eg. a small town)?

Mark Gillard

Wireless isn't a bad idea, these days, since 802.11b gear can now be had for fairly non-ridiculous prices; $150-odd for USB and PCI adaptors, plus a few hundred more if you want a wireless-to-wired bridge 'access point' as well. 802.11a gear is showing up now as well; considerably faster, but with lousier range, and higher price tags.

You can certainly set up a town-wide wireless network by using big fat signal amplifiers and matching antennas, but you will likely get busted if you do; there are strict legal limits on the maximum power output of license-not-required equipment like this. So, along with the cost, you've got the law to contend with as well. Not good.

If you want long-range wireless networking without broad coverage everywhere, though, you can do it without illegal amplification, by using directional antennas.

In Australia, a good place to find info about this is the Sydney Wireless data pages at: www.sydneywireless.org

PC RF

My computer generates a lot of interference on AM720 (ABC Radio National, Mum's favourite station). How can I stop the interference (other than unplugging the computer)? Is it possible to shift the interference to another station? Or am I stuck with this stupid problem?

RoXoR

You can't stop it, and you can't shift it, but you can minimise it.

There are lots of differently clocked high frequency circuits inside a PC. Most of them are motherboard buses of one kind or another, but expansion cards generally have their own clocks as well, and there are others; your keyboard, for instance, has an oscillator in it, and CRT monitors can produce plenty of RF. PC power supply units (PSUs) can squirt out a fair bit of RF as well.

As PC oscillators generate a simple square wave (which is what you want, for a nice crisp digital signal), they also generate lots of RF noise. Square waves have strong harmonics, so you'll often find strong emissions at two and three times the frequency of a given oscillator. Cables connected to the PC can act as transmitting antennas.

A metal PC case will provide pretty good RF emission shielding; a plastic monitor casing probably won't, but it's not a great idea to take it off and spray conductive lacquer all over it if you're not very sure on what you're doing, so never mind that for now. Instead, first, experiment with moving the PC and unplugging things from it.

You may find that one particular cable accounts for the 720KHz noise; you may also find that just turning the PC around greatly ameliorates the problem. Also bear in mind the inverse-square law; the strength of the RFI falls off with the square of the PC's distance from the radio, so moving the computer and radio only 40% further apart will roughly halve the noise problem.

Considering that the noise you're dealing with is relatively low frequency – 720KHz is way below the frequency of most of a modern PC's oscillators – clip-on ferrite beads are unlikely to help.

I'll mention them anyway, because they are useful for quieting cables that are radiating above 1MHz, and they only cost around ten bucks each.

Good electronics stores should have several types for you to choose from, including flat models made for ribbon cables.

They're fairly simple to use, and all you really need to do is clip them onto the cable.

Cables with a bulge under the insulation at either end (or both) already have ferrites built in, but adding another one (or even several) can sometimes help.

Something that may help you rather more is plugging the PC into a good power filter.

A cheap 'surge/spike filter' power board won't change anything, but a decent uninterruptible power supply or line conditioner should remove any RF from the mains supply; low frequency interference has a good chance of being PSU-related.

It's a good idea to filter your PC's power anyway, so that line faults can't fry it.

Don't forget the brake fluid

I am probably going to buy a Silverprop Cyclone 5 waterblock, Black Ice Extreme or Silverstorm BA radiator, Eheim 1250 pump and a couple of metres of Eheim 16/22mm tubing to water cool my 1GHz Duron.

(I *will* be getting an Athlon XP 2100+.)

I was just wondering if I would be able to use the coolant used in car engines in the above components?

Is it true that due to its higher heat conductivity, it could possibly ruin them?

Also, I'm not sure whether the waterblock will fit on a Socket A Duron/Athlon.

Brad Morton

ABOVE: Aussie outfit Silverprop's Cyclone 5 is as pretty as it is effective.

Car coolant doesn't actually have better heat transfer capabilities, generally speaking, than plain water.

Some of the additives used in automotive coolant make it flow a bit more easily, which helps heat transfer, but most of the additives are there to prevent freezing, boiling and corrosion. Like pretty much anything else you can add to water, they reduce its heat transfer abilities.

That said, it's a good idea to put a shot or two of radiator additive in a PC water cooling system.

Freezing and boiling aren't likely to be problems you need to address, but corrosion can still happen (especially in systems with water blocks made of one metal and radiator tubing made of another. . .), and the additive also ought to inhibit algae growth.

Algae isn't normally a problem in car coolant, because it gets so hot so often, but unfortunately PC coolant can be a great growth medium.

The Cyclone 5 should fit any Socket A motherboard that has mounting holes around the CPU socket.

PCs – threat or menace?

Is it true that computers could overrun the world? I don't believe so, but I'm still curious.

Michael

Yes. It is true.

The only way to protect the world from computers is to send them all to me, care of this magazine.

I will keep you safe from them.

What's MBR when it's at home?

Yesterday, we got this IBM NetVista PIII in running WinME at the workshop. It had an error message: 'No Operating System Found. Please Insert a Boot Disk and press F1.', or something like that. Anyway, the BIOS could detect the HDD A-OK, but FDISK said that there were no defined partitions. The HDD was on the way out (it was clucking every now and then – about every five to 35 minutes), but the computer was still detecting it so the data should be there.

To make a long story short, I ended up typing FDISK /MBR at the command prompt to rewrite the hard drive Master Boot Record, after which the PC could boot fine.

I cleared about five viruses off the hard drive before copying its data to a new drive.

My question is this: did I make the right choice in using FDISK /MBR? I don't know much about it and it seems to be, for the most part, undocumented. Could I have destroyed all data and partitions? What is the Master Boot Record anyway?

Alftura

Rewriting the MBR when it's been trashed by viruses or other mishaps is The Right Thing To Do. In any case, it's unlikely to do any harm.

Conveniently, Microsoft has done the question-answering job for me here: http://support.microsoft.com/default.aspx?scid=KB;en-us;q69013.

500! 600! 700! BANG!

After reading the article about GeForce4 Ti4200s in 'Holy Grail' (as *Atomic* is known to me and some of my friends) *issue 23*, I thought overclocking my graphics card might be a good idea.

I have a 128MB ASUS AGP-V8420 GeForce4 Ti4200, running on a Gigabyte GA-6VXE7 mobo with a P-III 800MHz and 640MB SDRAM.

I downloaded PowerStrip 3.29, but then realised that I didn't know how far I could safely push my GF4; being only 14 limits my cash inflow a little so I can't risk anything too much! That's why I decided to mail you 1337 people. What signs can I look out for that show that the GF4 is going too far? Any tips will be much appreciated!

Daniel Chambers

You won't blow it up – at least unless you go hog-wild and start fiddling with hardware mods to boost the card's core voltage and such. Otherwise, when you over-overclock a chip, it'll just stop working until it's wound down again.

When you overclock the GeForce4, increase your RAM and core speeds by small amounts – say, 5MHz at a time – and when you go too far, your computer will just hang. It'll probably be OK in 2D mode with the core speed wound up a bit too far, but will hang in 3D mode; over-overclocked RAM will probably give you noticeable twinkling-pixel image corruption before the computer hangs.Once you establish the ceiling speed for the core or the RAM (fiddle with them separately), just reset the hanged PC, re-set the card speed to something a bit more conservative, and you're done.

Phr33xtw33ks

Each month we present the best of our user-submitted tweaks. We test them, explain what they do and give them a rating of *Atomic* goodness. Send your coolest, most bad arse tweaks to phr33xtw33x@atomicmpc.com.au.

Modem tweakage or not?

I As soon as I bought *Atomic* yesterday and read it I thought 'why not send a small tweak to Phr33x tw33x?'

By entering '&FX3\N3%C3L1' in the Advanced tab of modem properties, your 56K modem runs at 115.2Kb/s.

Earlier my modem connected to iPrimus at a max of 40Kb/s. I don't know whether you guys know this already or if it will work on other PCs. Anyway try it.
Kanchana Pothuwila

O Not quite, Kanchana. Even though your modem reports a speed of 115.2Kb/s it is not actually connecting at that speed. It would be darn nice, I agree. I could flick this offensively expensive broadband connection right now (*shakes fist at Optus*). But alas, the best you will get from your dial-up modem will not come close to 115.2Kb/s.

Data communication speeds, in terms of dial-up networking, can be reported in different ways. The DCE (Data Communications Equipment) rate is the rate between your modem and the modem at the other end of the connection. Depending on a bunch of stuff such as line noise, impairment through pair-gain of the telephone line, and even the modem at your ISP, this is never likely to be more than 53Kb/s in even the most optimal conditions. The other is the DTE (Data Terminal Equipment) rate, which is reporting the rate your communications port is running at. In other words, this is the speed that your modem and your computer are communicating, such as 57,600b/s, 115,200b/s or 230,400b/s.

By using various initialisation strings, relevant to the particular modem you are using, you can change which rate is being reported. The DTE rate itself can be changed through your port settings in Device Manager. Maxing it out probably will do nothing for your actual download speeds. But in terms of your connection speeds to the Internet, the DCE is what you need to be concerned with. There are various other tweaks you can use to improve the DCE performance, such as the MTU, TTL and others, but we might deal with those another time.
1337ness 1/10

Is there nothing you can't customise?

This isn't a tweak so much as a really cool customisation. Not to be outdone by Ashton Mills' BIOS screen artwork in *issue 22*, we thought we would give you this one sent to us by NecronoM. For this tweak, we are going to presume a level of knowledge that you may not have, so if you don't understand any of this, then get someone else to do it who does know what they are doing.

We are going to change that dreadful startup screen in Windows 2000, you know, the one that says 'For troubleshooting and advanced startup options for Windows 2000, press F8'.

Step 1: What we are doing could fuXor your ntldr and your OS won't boot – if you mess it up – so backup by copying it somewhere first and work on the copy.

Step 2: Open the copied ntldr into your favourite hex editor and look for the string 'Starting Windows. . .' it should be found at offset 00033DCC and the string 'For troubleshooting and advanced startup options for Windows 2000, press F8' should be found at offset 00034284.

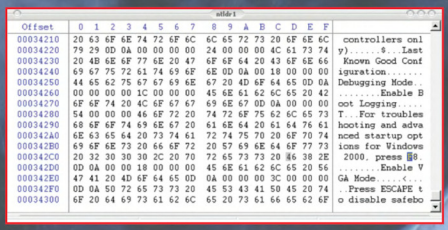
Step 3: Edit the text – go on, be creative. Remember that it must be the same length as the original. Pad out the rest of the string with spaces (eg. if I remove 'Starting' from 'Starting Windows . . .' it must be replaced with other text – eg. 'Crashing Windows. . .' or pad it with spaces).

Step 4: Save the file. Rename the original ntldr. Put your copy in C:\ and name it ntldr – make sure the attributes of the file are Read only, Hidden and System, and it is not compressed.

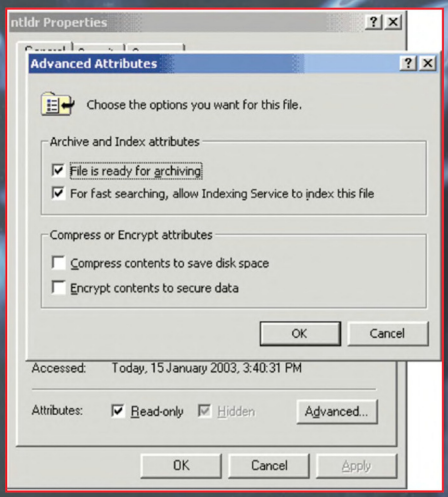
NTLDR editing – DOS Edit is your friend

You might just be able to make your Windows loading message just that more exciting – and all you have to do is use that silly, command line-based editing program that comes with almost every Microsoft operating system.

Anyhow, go to Start –> Run, and then type 'CMD' into the text box. This will start up the Windows DOS emulator. When the DOS box appears, go to C:\ drive and type in 'edit /70 ntldr'. You'll probably have to make file not read-only as well. Now, search for the 'Starting Windows. . .' string, and type in whatever you want. This might not work, so be careful, and make a backup. With some luck, you should be able to make the message as long as you want, without padding.



ABOVE: Editing your ntldr, in all its hexadecimal glory. This file is absolutely critical to your system – try not to break it.



ABOVE: Make sure you set the attributes correctly or you will find yourself reaching for your Windows 2000 installation CD as you mutter bad things about Phr33x.

SEE-THROUGH LOVE

Lights! With Ron Prouse's help you can turn that boring PC into something that rivals the most stylishly decorated Xmas tree, with the added advantage of being able to use it all year round! Yes, welcome to Modjitsu - our new and regular as Granpa section for people who like tools and pretty boxes.

Go and get NIC'ed

One thing that has always amused me is that fact that most network interface cards (NICs) have tell-tale LEDs facing out of the back of the host PC.

Now, I suppose if you are an entry-level network technician, spending your days crawling around under people's work-stations, then these LEDs may put some colour into your life – but for above desk dwellers they are a dead waste of time.

Most NIC cards will have two LEDs, one that is a visual confirmation that the card is actually connected to something (such as a router, or another card), while the other indicates activity over the connection, and so it gets to pulse!

Now that's a reasonably cool thing to be able to see. . . except that to get among the action you have to sit and watch the back of your computer.

Surrounded by the dust and cobwebs.

And people will talk about you.

Well, we are about to revolutionise the ancient art of NIC-watching forever, with a really simple little mod that will cost you less than a measly $10!

What's more, this mod will add a couple more impressive looking lights to the front of your computer – and that's what you really want, right?

There are two parts to this journey: one at the PCI-card end of town, and then the other at the front bezel. The PCI mod should be a fairly standard affair, while the bezel mod is just a suggestion – where you mount the lights is really up to your own individual flair. (Figure1)

The PCI end

Apart from the obvious (network card!), all you will need to complete this mod is:

- Two 2V LEDs in your favourite size/colours;
- A pair of four-wire connectors (male and female);
- Some wire (old ATA cable is really good for this purpose);
- Some sort of self-adhesive cable clip;
- A soldering iron, solder and heat-shrink; and
- Some left-over plastic sheet, or LED bezels. . . but we will get to that part later!

There is a 99% chance that your NIC will have the LEDs mounted in the same configuration as in the picture, that is, four pins that are soldered straight through the circuit-board.

The pins are in pairs, positive and negative, and arranged so that the two pins closest to the chrome mounting plate are one pair, the two further away are the other.

On the six different brands of NIC cards that I checked, all had pins that protruded through the PCB enough to solder extension wires straight on to, but, if that isn't suitable, it is simply a matter of loosening the existing LED leads, removing the OEM LEDs and then soldering the wires into the holes in the PCB.

Measure and cut the length of wire needed to reach the mounting point for the new LEDs. Remember though, that cutting some excess off later is easier than having to join more on!

Strip and pre-solder (or 'tin') the ends and then you'll be ready to solder away.

Once attached, insulate the wires with heat-shrink, and then secure the wires using the cable clip to relieve any accidental strain on the soldered joints.

I've used some PVC tubing over the top of the wires to give the 'rounded cable' look, but that is just for aesthetics.

At this point you can check that everything is operational by re-installing the card and carefully checking that the extension lead is delivering power.

And that's basically *it*. Too easy :) (Figure2)

The bezel end

The bezel end can be as simple or as complicated as you want to make it. One example is to simply use two 5mm LED bezels (those black things designed to hold LEDs in-place) and drill a couple of holes somewhere suitable.

However, there is also the opportunity to really 'tart things up' for next to no cost!

For this example I made a reflective light fitting for a 3.5in drive bay cover-plate using three pieces of sheet plastic.

The first (front) layer is a 2mm thick piece of diffuser from a fluoro-tube fitting, which spreads the light more evenly over the entire front area.

The second layer is a piece of 6mm clear acrylic which will house the LEDs.

The back layer is 3mm mirrored plastic, which will also help to make the light diffuse more. A single 3mm nylon locating screw in the centre holds them together, countersunk into the front layer so that it fits flat against the inside of the cover-plate.

If you want to do something similar, but have no idea where to get the raw materials, then one suggestion is to approach a plastics fabricator and ask if there are any off-cuts for sale. Usually you'll be pointed at a dumpster and invited to take whatever you need!

The LEDs are mounted into 5mm diameter holes, drilled at even spacings and glued in with epoxy resin. The four-pin cable connector has been epoxied onto a small Aluminium bracket which is held in place by the centre screw, making the connector-point more secure. The LEDs were then wired into the connector, while making sure to insulate the wires with heat-shrink. Two square holes were filed out of the cover-plate so that the LEDs lined up in the centre of them, and then the assembled light fitting was glued into place.

Snap the cover back into the bezel, connect the cable, and fire up your beast. Woot! Instant flashing light goodness to impress any unsuspecting bystander! (Figure3)

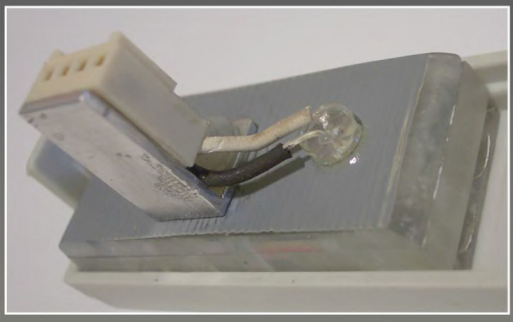


Figure1: NIC card mod from the front

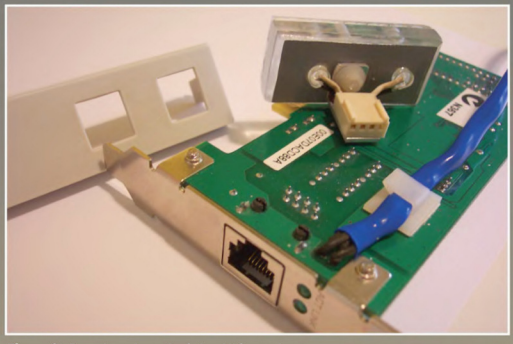


Figure2: Bezel end mod of the NIC card

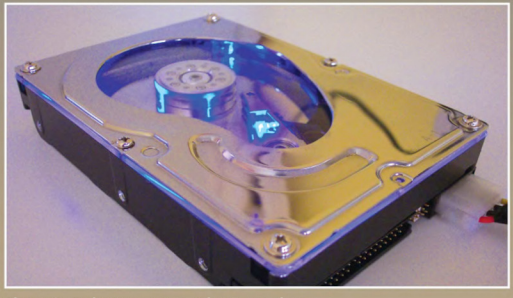


Figure3: Pointless hard drive mod lit-up

Figure4: Pointless hard drive mod polished but unlit

Pointless hard drive mod

Let me be the first to point out that this is a mod that will do absolutely nothing for the performance of your PC. In fact, if you have a crowded case it is going to take up valuable air space that would be better off used for keeping everything that bit cooler.

However, if you have a case with provision for seven or eight HDDs, and most of the bays are empty, then this is a visual mod that will knock 'em for a six!

The second point that needs to be made is that this is something that you only do to a dead HDD. A deceased HDD. A non-HDD. A 'no visible signs of life' HDD.

Why? Hard drives are manufactured under unbelievably clean conditions to infinitesimal tolerances, and a single spec of dust (or even cigarette smoke) will destroy the internal mechanisms faster than you can say 'back up all important data'. And we won't even mention the effects of static electricity. . .

That said, the inside of a HDD is an incredibly sexy sight with gleaming plates, polished actuating arms and other assets of beauty.

Far too sexy to be hidden away!

So, given a dead HDD, some case-space, and a few lights, it is possible to turn a piece of junk into a work of art.

All that is needed is:

- **A piece of 2mm clear Perspex;**
- **As many LEDs as you feel the need for;**
- **Your favourite cutting device; a drill, 3mm drill bit; and sandpaper;**
- **Brasso metal polish; and**
- **A soldering iron, solder and some wire. (Figure4)**

The first step is to disassemble and destroy. Remove the controller printed circuit board (PCB) and the ATA/Molex connector plate, and cut off the PCB power leads at the back of the Molex connector. There is no need to power a PCB that isn't being used, and you don't want to risk any short-circuits. The next step is to remove the screws that secure the stainless-steel (or Aluminium) top cover in place, and cut out your desired shape. Using sandpaper, de-burr and smooth the edges of the 'window'.

To get glowing edges similar to the picture, cut a piece of 2mm clear Perspex/acrylic to the exact shape of the top cover, and drill 3mm holes into it so that the mounting screws can pass through. Use 1200 grit Wet'n'Dry sandpaper to round and polish the edges of the Perspex to a 'glass' finish. Finally, polish the top and edges of the Perspex plate with Brasso.

The wiring is really quite simple. Solder a pair of 'power supply wires' from the back of the Molex connector, +12V (yellow wire) and the earth (or black) wire next to it. Drill a hole through the HDD body in a position that isn't visible through the window, and pass the wires through. Decide where and how many LEDs you want to use, solder wire leads onto them, and glue the LEDs into position. Don't forget to insulate any exposed joints and wires with heat-shrink. Connect the LEDs to the power supply wires.

The next step has a few options. Either use LEDs that can handle 12V, or wire up the LEDs with individual resistors or, alternatively, a common resistor. This part is similar to Dan Rutter's 'LED Case-light' tutorial that featured in *issue 12*. In fact, the HDD could be used as the housing for that project!

All that is left to do is re-assemble the components, including the Perspex 'plate', and power up. The great thing about using the existing power connector is that you can simply use any standard Molex plug to provide the power.

To give the illusion that the HDD is actually operational, an old ATA cable (rounded of course) can be plugged in, and the cable run somewhere out of sight.

Just don't plug it in to your mobo!

Stand back and admire the World's Sexiest Storage Device.

SexOring the desktop

What good is a beautifully modded case if it's accompanied by a boring, bland interface? Turn your artistic talents to the screen in front of you, and create your own super sexy desktop with Ashton Mills.

You look at your desktop all day, every day. So you might as well make it something that's inviting and comfortable, reflects your interests and passions, or earns the undying respect of your peers!

There is a wealth of resources available for tailoring the look of your desktop – and we're talking way beyond simple Windows themes. Well-designed and sexy desktops can illicit murmurs of appreciation and awe from your pets and pals alike, as well as being a pleasure to use. In fact, creating stylised functional desktops is something of an art, each as unique as the person that creates it.

The degree to which functionality and aesthetics go hand-in-hand is a matter of hot debate. Microsoft has chosen a middle line to balance these two important features, which is understandably the best route to take. But for most of us the limited configurability the Windows desktop offers isn't enough. And so replacement shells – the program that drives your interface – were born.

Linux desktops, by comparison, are often about configurability and choice, sometimes to their detriment. Linux programmers are used to DIY computing – if there's a feature they'd like that doesn't exist, they go right ahead and add it to the source. With this in mind it's not surprising there is a large number of desktops to suit just about every taste, from the minimalist Blackbox and its clones to the graphics heavy Enlightenment.

For both operating systems there are advantages to choosing an alternative desktop – some of them are more stable and feature-rich than the default, or faster and use less resources.

Mostly though, alternative desktops allow you to use your computer the way you want to use it.

And the sexier it looks, the better.

The wonders of Windows

For some time now Windows has supported the ability to run an alternate 'shell' over its default Explorer, which provides the desktop you're so familiar with. In fact, technically, Windows 98 and its predecessors were in many ways just a shell for DOS.

The shell not only determines how the desktop looks, but also how it operates. There are quite a few replacement shells available for different versions of Windows – some aim to be more functional than Explorer, offer more features with respect to the look and feel of the desktop, or both. You can keep, for example, your current Windows XP theme *and* run a different shell that changes the way you use your Windows box.

Aside from functionality and aesthetic sexiness there are other advantages to running a replacement shell: some of the shells covered here, such as Litestep and Geoshell, are faster than Explorer and use less resources as well. So let's take a look at some of the shells you can explore to create sleek, sexy, and feature-rich Windows desktops.

Popular shells

A quick search on Google will reveal a plethora of shells for Windows. Some of the more popular choices include:

Litestep: The granddaddy of replacement shells, Litestep was first written to give Windows the look and feel of the Afterstep desktop from Linux. It's not surprising, then, that it is also released under the GPL. Today it is the longest running replacement shell for Windows and is flexible enough to not just be themed but also sometimes mimic the operation of just about any desktop you can imagine.

There are themes available for many of the Linux desktops mentioned in this feature including Enlightenment, Blackbox and KDE! However the homepage at litestep.com provides a selection of more innovative themes that push the boundaries of desktop design.

SEE BELOW, PICTURE #1

SharpE: SharpE is a beautiful and well-integrated shell replacement that includes a number of modules to perform the same tasks as Explorer, including the Taskbar, Start Menu, and Tray.

As with Litestep it also adds features such as virtual desktops, plugins, and schemes. Some of the plugins include a Winamp control, CPU and memory meters, and weather report.

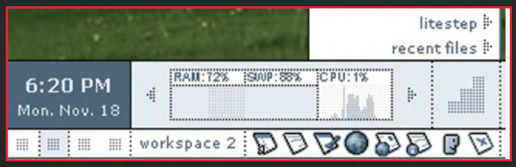
There's plenty of configurability with SharpE and it's available free to download.

SEE BELOW, PICTURE #2

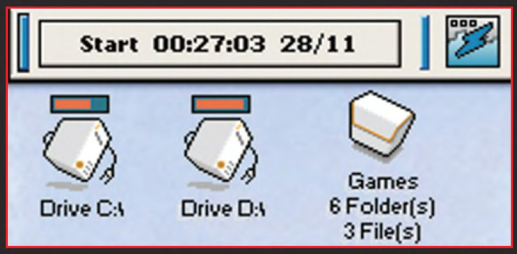
Geoshell: Geoshell is very much like SharpE with respect to its functionality and features, with plugins available for just about every function you care to integrate into your desktop. However, Geoshell goes for the minimalist approach, and gives you more screen real estate without sacrificing functionality or looks.

Various Geoshell modules can be placed around the screen and can be set to appear opaque when full screen applications are in use. The source code to Geoshell is also released under the GPL.

SEE OVER, PICTURE #3



#1 LITESTEP



#2 SHARPE

Linux resources

Window managers/desktops
Enlightenment: www.enlightenment.org
Blackbox: blackboxwm.sourceforge.net
WindowMaker: www.windowmaker.org
Fluxbox: fluxbox.sourceforge.net
Waimea: www.waimea.org
KDE: www.kde.org
Gnome: www.gnome.org

Themes and content
Themes.org: www.themes.org
KDElook: www.kdelook.org
Art.Gnome: art.gnome.org

Windows resources

Shells
Wincustomize: www.wincustomize.com
Aston Shell: www.astonshell.com
SharpE: www.lowdimension.net
DarkStep: www.darkstep.com
Litestep: www.litestep.com
Talisman: www.lighttek.com
Geoshell: www.geoshellx.com

Themes and content
Desktopian: www.desktopian.org
Deskmod: www.deskmod.org
XPtheme.info: www.xptheme.info

Aston Shell: The Aston shell, like the other shells listed here, has the capability to produce some very impressive themes. Its extensible design focuses on flexible sliding toolbars to launch programs and, like most replacement shells, provides the usual Start Bar and Taskbar equivalents. Definitely one of the more impressive shells out there.

The Aston shell costs US$28 to register.

SEE BELOW, PICTURE #4

Talisman: Talisman is one of the more interesting replacement shells in that it allows you to script objects of any size and type to perform actions. This means you can use Talisman to create entirely new interfaces that work quite differently from your Start Bar variety. For example, you could create an interface for a home theatre PC that provides a simple non-geeky view with large visual objects to control basic functions.

Talisman provides a 30-day trial and costs US$25 to register.

SEE BELOW, RIGHT, PICTURE #5

While it's possible to manually specify the shell you want to use in Windows, all of the above replacement shells will automate the install process for you.

Just be sure to switch back to Explorer before trying another shell, or you might end up with a bit of mess with conflicting shells!

This is just a start point: there's plenty to play with here, and after you've explored a number of the themes available for them you'll no doubt be interested in adding your own touch.

Linux loving

It's almost a prerequisite for Linux that software comes in a variety of flavours and configurations. So it's not surprising that the underlying desktop that runs all your applications also comes in many varied options. There are desktops available for Linux that cater to just about every taste, from lightweight, fast and simplistic desktops through to full-featured, aesthetically sexy, beefy behemoths.

To be sure the Linux GUI is a little more complex and deserves some explanation. XFree86, the graphics powerhouse that Linux uses to drive your video card does not, on its own, provide a desktop environment. This is left up to the *window manager*, the software that, as you might guess, manages the windows on your desktop. This includes not just the way window borders look, but also how they behave. Today many window managers have expanded to provide fully-fledged desktop functionality, and while some desktops such as Gnome still split this functionality (Gnome itself) from the window manager (Sawfish or Metacity) the trend seems to be, as with KDE, to incorporate both into the same solution (KDE does have its own window manager, but it's indistinguishable from the rest of KDE).

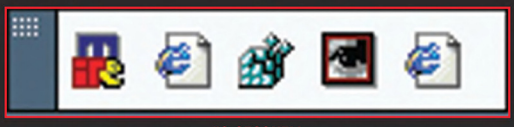
To add another confusing layer, applications provide their own look and feel, dependent on the toolkit used to create them (such as Qt for KDE or GTK for Gnome). This is true of Windows as well, it's just that this happens to be standardised. This is why, for example, you can run a KDE application on a Fluxbox-managed desktop and see the look and feel of KDE controls surrounded by a theme and window buttons that belong to Fluxbox.

Popular environments

More so than with Windows the varied selection under Linux can have a big impact on the way that it looks and operates. Taskbars and Start menus like KDE and Gnome use are not the standard.

WindowMaker: WindowMaker is a mature, light, desktop with a plethora of plugins (called 'dock applications') covering everything from flaming CPU meters through to miniature TV-out! While the desktop itself is clean and easy-to-use the dock applications lend it its popularity. As a result many other Linux desktops support the ability to load and use WindowMaker dock apps (see www.bensinclair.com/dockapp for some 200 applications).

SEE BELOW, PICTURE #6



#3 GEOSHELL

#4 ASTON SHELL

#5 TALISMAN

#6 WINDOWMAKER

General resources

Wallpapers
Deviant Art: www.deviantart.com
Digital Blasphemy: www.digitalblasphemy.com
Propaganda: www.ibiblio.org/propaganda
Desktop Girls: www.desktopgirls.com
Anime Wallpapers: animewallpapers.com
Game Wallpapers: www.gamewallpapers.com

Icon sets
Icon Factory: www.iconfactory.com
Icon Bazaar: www.iconbazaar.com
Top Icons: www.topicons.com
Icon Archive: www.iconarchive.com
Cool Archive Icons: www.coolarchive.com/icons.cfm

Free fonts
1001 Free Fonts: www.1001freefonts.com
Caffeen Fonts: www.swank.ca/caffeen/fonts
Cool fonts: www.coolarchive.com/fonts.cfm
Core's fonts: www.core.nu/v6/fonts_nav.html
Acid Fonts scifi: www.acidfonts.com/scifi.htm
Font Freak: www.fontfreak.com
Font File: www.fontfile.com

Blackbox: Blackbox is a very light, sleek, and easy-to-use window manager that forgoes unnecessary features in return for speed and simplicity. No Start button, no Taskbar, just a comprehensive desktop menu system. While Blackbox themeing generally involves only colour schemes, there are still some very sleek themes available. Unlike KDE and Gnome, which force the desktop background, Blackbox and Fluxbox (below) allow you to set anything to display as a background, including programs (try running a screen saver, such as the Matrix, for a very cool animated desktop background). Blackbox is ideal for low-memory machines or those that appreciate a fast, simple, desktop.

Fluxbox: Fluxbox is a branch of the Blackbox development tree that takes the sleek design in BB and adds some intelligent and useful features – such as tabbed windows that can be grouped together and an icon bar for minimised windows. Both Blackbox and Flux also support WindowMaker dock apps, providing a wealth of useful desktop tools to combine with your lightweight Linux desktop.
SEE BELOW, PICTURE #7

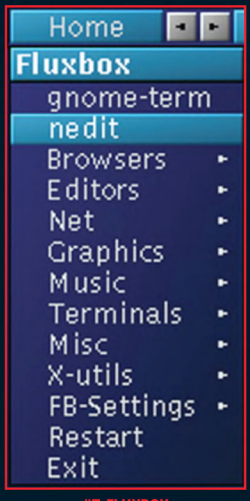
Waimea: Like Fluxbox, Waimea is relatively new and aims to be an efficient desktop solution for Linux. Combining a highly configurable style engine with a lean, clean menu system it's clear Waimea has a lot of potential. Its style engine is versatile enough to emulate the look for many other desktop environments, and supports KDE and Gnome applications.
SEE BELOW, PICTURE #8

Enlightenment: Enlightenment was in its time the first Linux desktop to throw functionality to the wind and just try and create the sexiest, most versatile desktop known to human kind. Development seems to have stagnated, but even at v0.17 Enlightenment provides immense flexibility for theme makers and adds a host of nifty special effects for your desktop from animated rippling water through to being able to drag one desktop over another as if they were pages in a book. Enlightenment is all style.
SEE BELOW, PICTURE #9

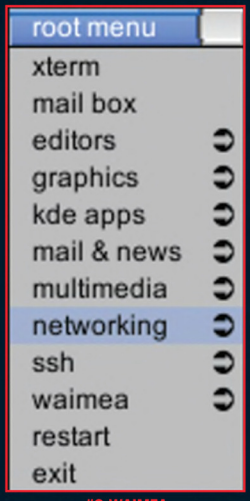
Gnome: Gnome is one of the more prominent desktop environments available for Linux, with a large and loyal following. Not as fully-featured as KDE, what it lacks in functionality it makes up for in style. Gnome first put Linux desktops on the map extending the Windows-esque Start Bar philosophy and adding multiple panels and applets to create an easy-to-use Linux desktop. Sleek, intelligent and with a host of popular applications built for it (such as Galeon and Evolution), Gnome is core to the future of Linux on the desktop.
SEE BELOW, PICTURE #10

KDE: While Gnome got there first in trying to standardise the Linux desktop, KDE has rapidly risen to be the premiere desktop solution. This is partly due to some extensive work in recent releases that not only help to cement functionality and standardise the desktop, but also in terms of its aesthetic qualities. With its most recent release it is finally able to compete with Gnome in the sexiness stakes while providing an excellent and consistent interface.
SEE BELOW, PICTURE #11

There are, of course, many others to choose from. Start with the links at the end of this piece and then expand your search with Google's Linux search (www.google.com/linux).

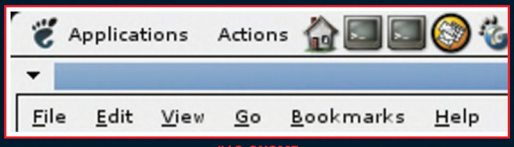


#7 FLUXBOX

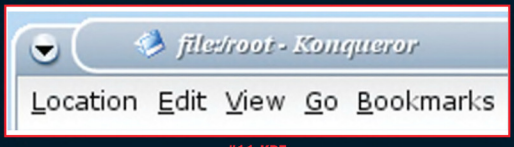


#8 WAIMEA

#9 ENLIGHTENMENT



#10 GNOME



#11 KDE

BACK THE F**K UP

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- ☐ Atomic 02 $8.95 inc. p+h
- ☐ Atomic 03 $8.95 inc. p+h
- ☐ Atomic 04 $8.95 inc. p+h
- ☐ Atomic 05 $8.95 inc. p+h
- ☐ Atomic 06 $8.95 inc. p+h
- ☐ Atomic 07 $8.95 inc. p+h
- ☐ Atomic 08 $8.95 inc. p+h
- ☐ Atomic 09 $8.95 inc. p+h
- ☐ Atomic 10 $8.95 inc. p+h
- ☐ Atomic 11 $8.95 inc. p+h
- ☐ Atomic 12 $8.95 inc. p+h
- ☐ Atomic 13 $8.95 inc. p+h
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WIN STUFF AND HAVE FUN!

That's why you love us right? We feed your mind *and* your lust for hardware! OK, you might have to work for this gear but we're sure you'll love doing it.

We have a sweet prize up for grabs for the Atomican who sends in the sexiest desktop we have ever seen. Like, EVER.

Simply send in a high quality screenshot of your carefully-designed desktop to sexydesktop@atomicmpc.com.au and a paragraph describing the tools you used and how you got it to look so damn sexy, so that others can do the same. It's the Hot Box for your desktop.

Desktops must be original, but feel free to enter as many desktops as you like.

The entries will be judged by *Atomic* staff. Winners will be notified by email by 19/03/03 and the winning entries published in *issue 27*.

Best Sex on the Desktop wins the spanky Compro VideoMate Cinema! Thinking that we'd need a desktop-related prize for this here competition, we called George at AMI (www.amicomputers.com.au), because AMI carries top gear like that, and George is the sort of bloke whose generosity ought to be taken advantage of. As reviewed in *Atomic 21*, on *page 52*, this neat bit of kit packs a Ti4200 with an external TV tuner and remote control.

Beyond the basics

A desktop under Windows or Linux can be much more than just its interface.

While some of the shells and window managers discussed above have some impressive features for tailoring the look of your desktop, including the use of themeing, there are plenty of resources out there to help you add your own touch, or improve upon the themes you download.

Backgrounds have a big impact on the look of your desktop. You'll find a selection of sites to start with at the end of this feature, where you can look for an image to use as your background. Take note that backgrounds can use a lot of memory, so if they're not already in a compressed format use Paint (or similar) to convert them to JPG or PNG (PNG will be larger but provide better quality).

You can also, depending on the shell or environment, use your own icon set and fonts.

On the previous page of this article you will also find sites for replacement icons and fonts.

Fonts especially can have a big impact on the look and feel of your desktop – window titles, menu options, and of course text boxes, all use a variety of fonts.

Microsoft used to offer an excellent selection called Web Fonts that worked beautifully under Windows and Linux, but sadly it has since taken them down.

To install new fonts under Windows simply extract them to a temporary directory and then click Start -> Settings -> Control Panel -> Appearance and Themes and then open up the Fonts folder. Then click File -> Install new Font.

Installing icons under Windows is dependent on the shell you use, and the same goes for fonts and icons under the varying Linux window managers and desktop environments.

Note that some applications, such as Winamp on Windows and XMMS on Linux, support skins and some theme makers have gone so far as to make skins for these applications to provide a consistent desktop.

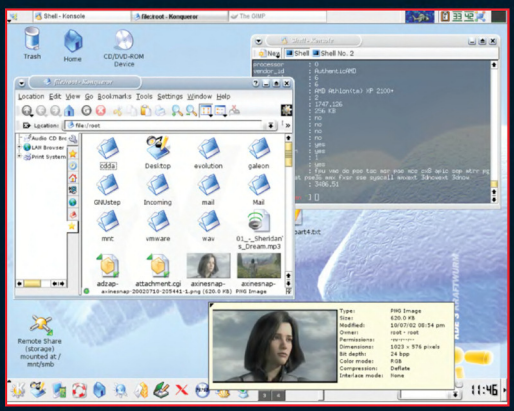
So, where possible, skin your frequently used applications to fit neatly with a theme.

Ultimately, though, nothing is as satisfying as creating your own theme for your desktop.

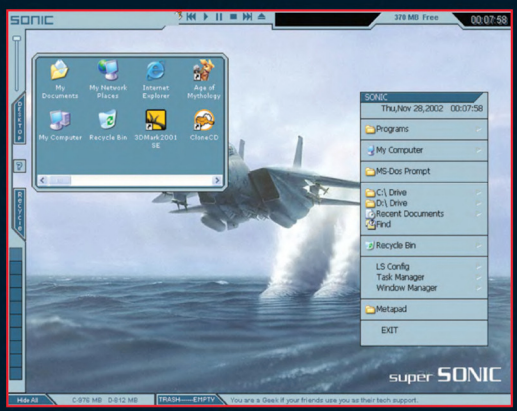
Search the Web for backgrounds, icons, fonts and graphics ideas and then read up on the themeing procedure for your chosen shell or window manager.

If you need a high powered graphics program to create images for window borders and the like try Paint Shop Pro for Windows or The Gimp for Linux (note there's also a version for Windows too).

If you're proud of the hard work you've put in and want to show it off don't forget to share it with the world and upload it at a theme site. Infamy awaits.



ABOVE: KDE comes with a wide variety of desktpop backgrounds, themes, and colour schemes. Pictured here using the Keramik theme.



ABOVE: Litestep is a remarkably configurable desktop environment, pictured here with the Supersonic theme.

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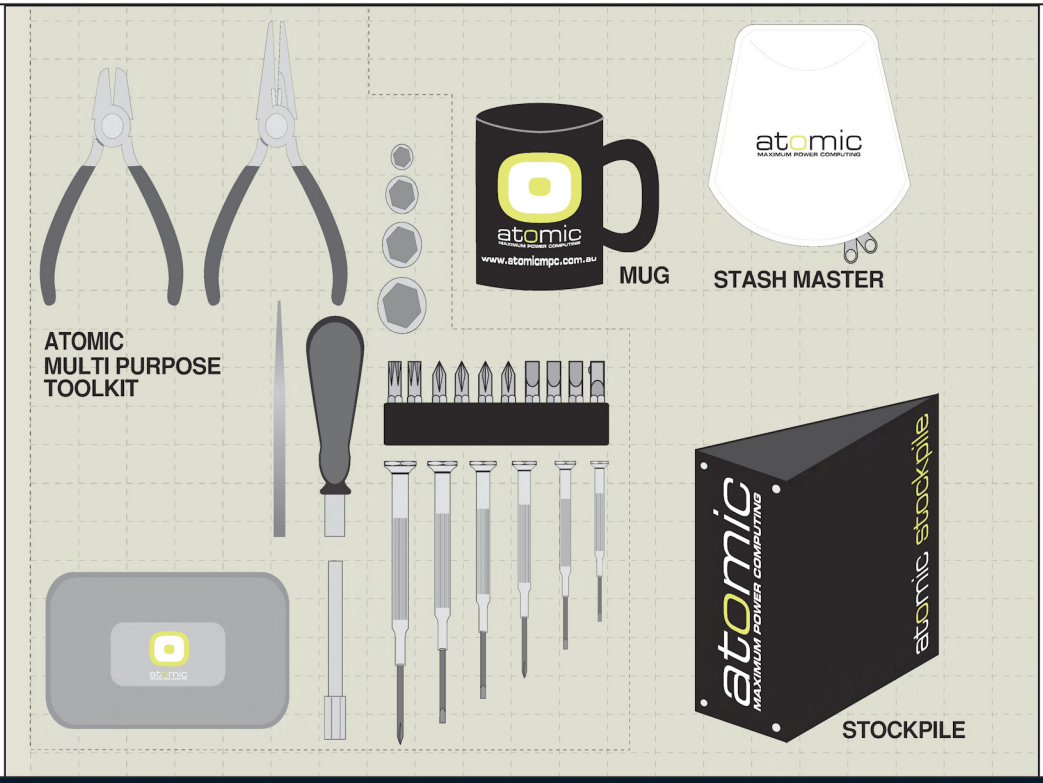

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Search for a super model Pt2

Last month Ivon Smith demonstrated the navigation and object manipulation tools in 3ds max, plus some helpful shortcut keys. Now we'll create 3D objects, modifying and manipulating them to make shiny 3D things for pleasure.

The *Command Panel* (fig.1) on the right side of the UI is where we start creating our objects. Many professional 3D modellers and games artists create models by starting off with *Primitives*. These are simple geometric (3D) objects, such as boxes, spheres and cones that are used as the basis for all kinds of more complex final models. It's like starting off with a round blob of clay and working with it until you have created your final sculpted shape

Viewport controls

It is much more efficient to use keyboard shortcuts and three-button mouse manipulation of scenes and objects, rather than clicking on every button in the 3ds max UI. The viewport panels (main viewing areas of objects and scenes) can be stretched, rotated (**middle mouse button + Alt key** – click and drag), changed from one view to another (*P=Perspective view, F=Front, T=Top, B=Bottom, L=Left, U=User, C=Camera* or right click on a viewport title, go to *Views* and select from any available view – all except *Perspective* and *Camera* are orthographic views – they show no perspective shrinkage). The viewport manipulation tools are at the bottom right of the UI.

There are eight buttons: (top left to right) *Zoom (Ctrl + Alt middle mouse drag), Zoom All, Zoom Extents (plus Zoom Extents Selected fly-out – Z key)* and *Zoom Extents All (Ctrl + Shift Z) (plus Zoom Extents All Selected).* The first two are click-drag within viewports to zoom one or all viewports, respectively. The last two are click-to-action buttons and fit all scene objects into one or all viewports, respectively. The fly-out options fit only selected objects similarly into one or all viewports. (bottom left to right) *Field-of-View, Pan* (middle mouse drag) and *Arc Rotate* (*Alt +* middle-mouse drag) change your viewing position while the *Min/Max Toggle* (*Alt + W or just W* in 3ds max4) enlarges or shrinks the selected viewport. Generally, it is worth setting the *Arc Rotate* button fly-out to *Arc Rotate Selected* as it helps spin a viewport around the object you are working on.

N.B. *If you are using a mouse manipulation of a viewport, an object or any parameter value and you decide to undo the change, this can be done easily (rather than the usual* **Ctrl + Z** *after the change) by keeping the left mouse button depressed as you make the change, and before releasing it just tapping the right mouse button, which undoes the change and deactivates the left mouse button until released again.*

Character and object creation

We are going to make a wee alien character. The character will be made mainly using the technique of *box modelling*, by which the entire character starts life as a humble box, whose faces, edges and vertices (points joining edges) are moved, bevelled and extruded to get a low resolution mesh model. This is smoothed to give the final curvy character. This will be in order to demonstrate the power of this simple method to produced advanced 3D models.

Build on these techniques, experiment and try everything you can uncover. 3ds max has a tremendously deep toolset, though it is fairly easy to get started. Always refer to the Help and Tutorial documentation that ships with max.

A couple of tips not directly 3D:

(a) Make sketches (fig.1B) of all the models you are creating. It helps clarify your ideas/vision, it's better to design on paper than on the computer and the images can be scanned and placed as backgrounds within the viewports so you can model directly over them. Images can be added via the *Views -> Viewport Background* menu, though if you find this option too inflexible, consider just creating a *Plane* or *Box* onto which you put a material with your sketch bitmap in the *Bitmap channel* of a new material. Do this by selecting a blank material sample slot, and clicking the small square button immediately to the right of the colour selector rectangle to the right of the *Diffuse:* word under the *Blinn Basic Parameters* in the *Material Editor*. Browse for your bitmap image (make sure it is RGB not CMYK). Once it is loaded, near the top of this *Diffuse* channel of the *Material Editor* activate the *Show Map in Viewport* button (a checked cube icon) so you can see the image in the viewport once it is applied to the *Plane* object. To aid seeing this background image you can toggle the selected model into semi-transparent mode using **Alt + X**.

(b) 3ds max is extremely resource-hungry. You can never have too much RAM (most pro Workstations run 1-2GB of RAM). Use a fairly

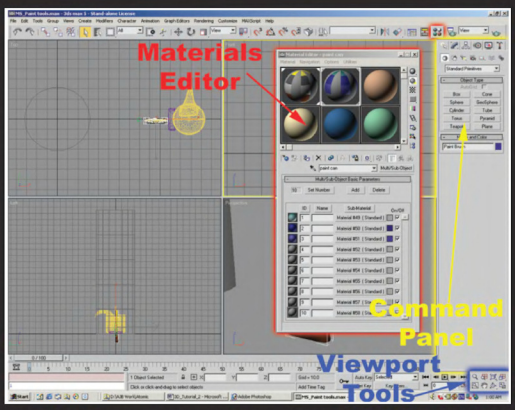

FIG.1: 3ds max5 Command Panel, Material Editor and Viewport Tools.

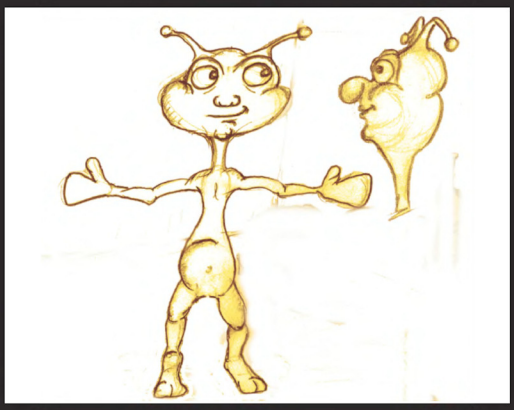

FIG.1B: Sketch your characters first.

powerful 3D graphics card. The NVIDIA GeForce series has always been a good choice for the general user, giving reasonable OpenGL performance without breaking the bank. 3ds max also has optimisations for DirectX displays, which the GeForce copes with very well. Though not at all essential, dual CPU machines can almost double your final image rendering speed in 3ds max when it comes to outputting the final results to still or movie format files.

Creating our alien

fig.2 From the *Command Panel -> Create Tab -> Geometry -> Standard Primitives,* select the *Box* button and click and drag in the *Top* viewport to make the base of the box. Release the mouse button and move it up and click to finish. Don't worry about position or size, as we'll edit these soon. (Often, it is good policy to create objects in the *Top* viewport like this as it automatically orients their local co-ordinate axes to the absolute world co-ordinates.)

To position a selected object at the world origin (0,0,0) choose the *Select and Move* tool, right click the button (or **F12**) to open the *Move Transform Type-in panel* and you can either type in these values, or more easily, right click on the value spinner arrows to zero them (or in some parameter value cases, this sets their minimum value).

To set the size and segment parameters of the box once it is created, make sure it is selected and click on the *Modify Tab* in the *Command Panel* to reveal all its parameters. Under the *Parameters* rollout section of the panel set these values: *Length=100, Width=170, Height=300,* and the corresponding segment numbers (*Segs.*) to 2, 4 and 5 respectively. In the *Command Panel* if any section title appears as a collapsed bar with a '+' symbol on it, it can be opened by clicking on the bar, click again to collapse it. As with the *Top Tool Bar*, if the cursor is positioned over any blank portion of the *Command Panel* it will change to a grabby-hand icon. This allows you to click and drag up or down to see the hidden parts of the panel or you can drag the tiny thin scroll bar at the far right of the panel section (not so easy!). Also, since 3ds max4 onwards the entire *Command Panel* can be stretched out sidewards to the left by positioning the cursor on its far left edge until it changes to the arrows icon then drag to the left. This comes in handy when an object or modifier has many parameter sections – particle systems, for instance.

When deciding sizes and number of segments in primitive objects like this, try to think ahead as to what you are going to create and what the minimum number of segments the object will require. In 3ds max we shall be adding the *Mesh Smooth* modifier later to create a smooth, high resolution, curved surface so you only need to imagine the object as a low polygon, faceted shape. Although changing the segment values can

How 3ds max alters objects with Modifiers

A word about how 3ds max alters objects with Modifiers. Primitive objects (for instance) can have a whole host of complex changes made to them that allow better modelling to be performed over and above simple parameter changes (length, height and segments). This is done by adding Modifiers to the original object that are sequentially layered in the *Modifier Stack*. You can access any level of the changes or Modifiers, similar to, but more advanced than the History in Photoshop. And the power of this object-oriented, parametric Modifier modelling process is that you can often go back down the stack to change parameter values of an earlier Modifier stage and the changes will be passed back up to the top of the stack which is the final output modified object. For example, a *Primitive Box* can be made to be smoothed and hi-res with the *Mesh Smooth* mod, melted with the *Melt* mod, curved with the *Bend* mod and then roughened up with the *Noise* mod on the top of the stack. At any point you can access the parameters in any of these Modifiers, or even the Box parameters if you want to, say, make this cool, lumpy melted bent blob a bit taller by altering the *Box Height* parameter down at the bottom of the Modifier Stack, or change the type of melt behaviour from *Ice* to *Jelly* in the *Melt* mod parameters. You could animate the Bend mod Direction value lower in the stack so the end result is a lumpy blob that swings its head around.

Clicking on a Modifier that is in the stack reveals all of its parameters in the *Modifier Tab* of the *Command Panel*. The Modifiers can also be drag-and-dropped to change their order of influence on the final object output, or even dragged onto other objects in the viewports to create copies of these effects on other shapes or objects. Right clicking Modifiers in the stack reveals other options too, and the *Light Bulb* icon on their left hand side in the stack toggles their effects on and off.

Features that can be accessed by right clicking on the stack entries are as follows: *Rename*, which allows you to customize entry names within the modifier stack to keep better track of complex model change stages. *Delete*, or the *Remove* modifier from the stack icon takes away that mod. *Cut*, *Copy* and *Paste* all function within the mod stack, and Instanced modifiers or objects are copies that change dependently as you change the original version, and vice versa. As with *Mesh Smooth*, certain mods can be turned on/off or even switched off in the viewports but not the renderer. Subtrees function in a similar fashion as in Windows Explorer, whereby sub sections of mods can be viewed and altered.

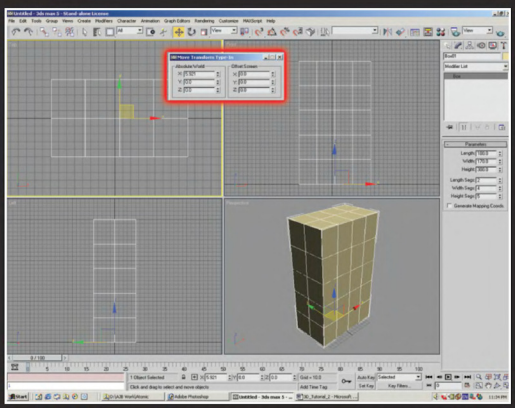

FIG.2: Creating and positioning a box with Move Transform Type-In.

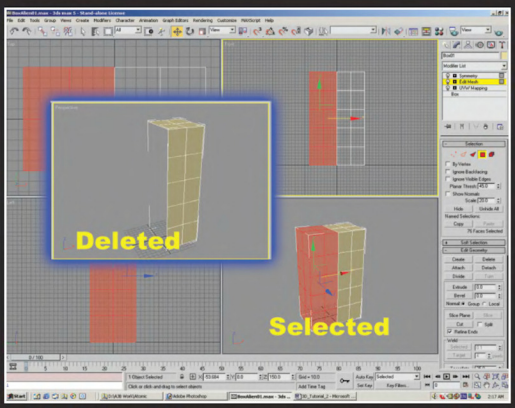

FIG.3: Selected, shaded and deleted polygons.

later sometimes cause problems, it is possible to add them via a *Slice* modifier or even the newer *Quick Slice* tool if we are working with an *Editable Polygon*-type of object.

Note that I chose an even number of width segments because I wanted to have a set of polygon edges (the lines in the wireframe viewports) running down the centre. This is because the entire character is going to be essentially symmetrical down the middle – 3ds max allows us to only bother creating one half and duplicating this entire section so that two identical sides are created. It's a fast and accurate way of building symmetrical objects that can later be tweaked to introduce asymmetrical details if needed. There are a number of ways of doing this, but in 3ds max5 the *Symmetry* object modifier is the easiest.

Creating the symmetrical body object in 3ds max5

Select the box. Go to the *Command Panel -> Modify Tab* and click on the *Modifier List* dropdown menu arrow to reveal all the available Modifiers that can be added to that object (this varies). Either go down the list and select the *UVW Map* modifier, or simply hit the 'U' key on the keyboard repeatedly to scroll through all the Modifiers whose name begins with that letter. By default in 3ds max5, this means hitting the 'U' key twice, then simply hitting Enter to make your selection. This *UVW Map* Modifier adds an object based co-ordinate system to the surface to allow more accurate and predictable texture mapping of materials onto the object. It's a good idea to add this mod down low in the stack so that the desired texture effects are passed up to the top as you add more Modifiers or make any changes. It also helps viewport display of complex or bitmap textures so you can edit or see better what the final texture effect or position will be.

Select the *Box* radio button under the *Parameters* section of the *UVW Map(ping)* Modifier since this initial object shape resembles best this mapping shape. Leave the size and tiling parameters as default.

Now add the *Edit Mesh* mod (a single hit of the 'E' key in 3ds max5 once the *Modifier List* is selected) so we can alter our box object on a polygon level to shape it into the character's body. Recall that we also wanted to model both sides of the body simultaneously and symmetrically, so now add the *Symmetry Modifier* from the *Modifier List*. The *Modifier Stack* of the box should now read *Box / UVW Mapping / Edit Mesh / Symmetry* in that order from bottom to top.

Click on the *Edit Mesh* mod in the stack, revealing its parameters in the *Command Panel* below. With the *Selection* rollout open (below the *Modifier Stack* window) you see the five different red icon buttons for accessing sub-object levels of the editable mesh. These are *Vertex, Edge, Face, Polygon* and *Element*. We will delete half of our box, so click on the *Polygon* sub-object icon. (**N.B.** *This can also be done by right clicking on the object in the viewports and from the Quad Menus that pop up, go to Sub-Objects -> Polygon.*)

In the *Front* viewport drag a selection box around the entire left side of the object (see fig3.) – these polygons should become shaded red in the viewport (toggle this sub-object shaded selection effect on/off with the F2 key). Hit the *Delete* key to remove them. Notice in the Smooth + Highlights shaded *Perspective* viewport (toggle this effect with F3) you can now see right through the box where the polygons were removed. This is because polygons are one-sided (can be seen through from one side) unless we add a two-sided material to them from the *Material Editor*. Spin or zoom the *Perspective* viewport (**Alt + middle mouse button drag** or **Ctrl + Alt + middle mouse button drag**) to get an idea of this one-sided effect. (**N.B.** *Toggle the Edged Faces display mode in any Smooth + Highlights shaded viewport with the F4 button.*)

Let's just add a two-sided material to illustrate these points and practice using the Material Editor. Hit the button on the *Top Tool Bar* (see fig1.) or 'M' on the keyboard to open this panel. Right clicking on the material sample slots enables more materials to be displayed by setting the number to, say, 5x3 instead of this 3x2. Select the top left sample slot. Below, make sure, under *Shader Basic Parameters* that the *Blinn* type is chosen from the dropdown menu, and under the *Blinn Basic Parameters* rollout click on the colour selection rectangle (to the immediate right of the word *Diffuse*) to open the *Colour Selector* panel. Choose a colour then close this panel. Under *Shader Basic Parameters*, check the box next to '*2-Sided*'. Then, making sure your object is still selected, click the *Assign Material to Selection* button just below and to the left of the material sample slots. You can also drag and drop materials onto objects. Your see-through half-box should now be fully opaque from all directions. Close the *Material Editor* for now.

Deactivate the *Polygon Sub-Object* level by toggling the button off. If you are still displaying only half a box even though we have added the *Symmetry* mod, click the *Show end result on/off Toggle* button at the base of the *Modifier Stack* window. This displays the end result of all the active *Modifiers* in the stack even though you may be accessing a mod lower down in the stack. We need to turn this button on because we are working on the *Edit Mesh* mod level but need to display our symmetrical object as we make modelling changes to it. Now whenever we access a sub-object level, such as *Polygon*, and alter the selected polygons, the effect is mirrored on the other side of the object.

Select the *Vertex* sub-object level. In the *Top* viewport drag a selection around the right hand side front and back corner vertices, making sure *Ignore Back Facing* is not checked on the *Command Panel*. In the *Perspective* viewport you should see the selected vertices

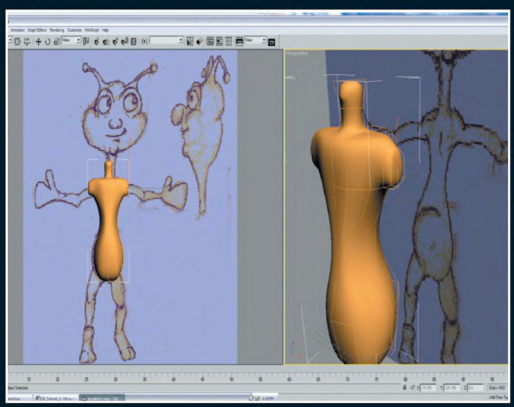

FIG.4: Smoothed mesh with low-poly Edit Mesh selection.

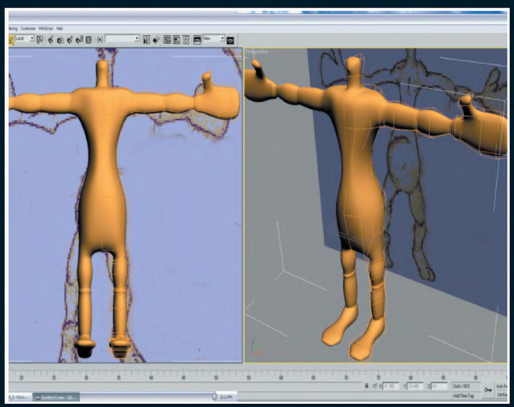

FIG.5: Smoothed mesh for entire body with Symmetry modifier.

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in red running all the way down the two vertical corner edges. In the *Top* viewport, with the *Select and Move* tool, click on the red x-axis arrow (*Transform Gizmo*) and move the vertices to the left around 12 units (watch progress of this value in the 'X' spinner box, bottom centre of the 3ds max5 UI) to round the edges of the body a little. In the *Top* viewport you can also shrink down the distance between the front and rear vertices using the *Select and non-Uniform Scale* tool, positioning it over the y-axis to restrain the size change to this direction.

In the *Front* view drag a selection around the middle right hand vertices of the object and move them inwards towards the middle to shape the waist. Select and move the shoulder and hip/stomach area vertices to further shape the body according to your character design image. Also, to get a better idea of how the final hi-res object will look you can add a *Mesh Smooth* modifier above the *Symmetry* mod in the stack, setting the *Subdivision Amount Iterations* to '2' to smooth out the mesh. Now when you go back down the stack to work on the *Edit Mesh* level you can activate the *Show end result on/off Toggle* again to display the end result while working on the lower poly mesh, which is displayed as an orange wireframe. If you prefer to see the mesh of the *Edit* Mesh level just toggle the *Light Bulb* icon on/off alongside the *Mesh Smooth* mod. Continue selecting and dragging the vertices around to properly shape the character torso. For instance, in one of the side views (*Left* or *Right*) select the vertices in the middle of the back and pull them in a little, and around the butt region and pull them out backwards. Do the same for the stomach area.

One very useful feature of *Edit Mesh* is the *Soft Selection* rollout. Open it up and check *Use Soft Selection, and set the Falloff* to around 90 and you should see the vertices around the red selected ones become coloured with a gradient colour from red to yellow to blue. Doing this will show the falloff effect of the influence over moving these vertices.

Pull the top central vertex (where the neck will be) up a little to produce a slight bump in the mesh smoothed version. Right click on this vertex to open the *Quad Menus* and select *Chamfer Vertex*, and when the cursor changes to the chamfer triangle when over the vertex, click and drag in the *Perspective* viewport to create a whole new polygon where that vertex was. This will be more visibly obvious with *Edged Faces* (F4) active. Then enter the *Polygon* sub-object level, select this new polygon on the top of the torso (highlight it using F2), right click it and select *Bevel Polygon* from the *Quad Menu*. Position the cursor over the polygon until it changes then click and drag to *Extrude* it upwards producing part of the neck. Watch the *Extrude* spinner value in the *Command Panel* as you drag the mouse and release the button at around 30, but do not move the mouse after this as this will *Bevel* the polygon to a bigger or smaller size. So just left click the mouse again to terminate the process. Repeat this process, but this time move the mouse to *Bevel* the new polygon to a value of around 5. This increases the diameter of the neck near the head. The central *Edge* will probably move over the central axis, so fix this by entering the *Edge* sub-object level, selecting this edge, activating the *Select and Move* tool, right clicking it to open the *Move Transform Type-In* (F12), and right clicking the x-axis spinner arrows to zero the value. Edit the neck via further sub-object level manipulation.

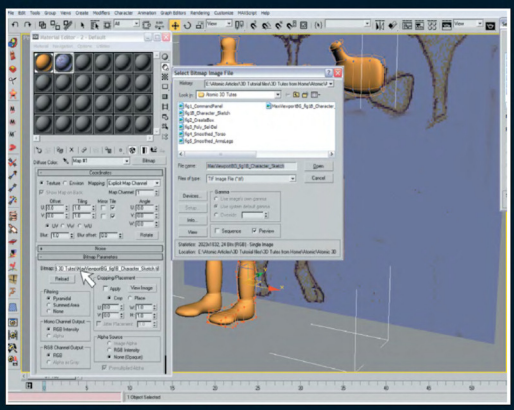
Now we can create the arms using a similar technique. If such a character is to be posed or animated using *Bones* later you need to include extra polygon sections at all the key joint areas in the limbs, such as elbows, to allow smoother bending of the polygon mesh.

Select the two outer most polygons at the top of the torso to extrude the arm outwards. Sometimes, the extrusion process can produce spurious results if a set of polygons is not planar or tangential to the extrusion direction. So with these polygons selected, activate the *Left* viewport (L key) and click the *View Align* button in the *Command Panel*. Monitoring the *Front* view to check shape/size compliance with your background image, right click these selected polygons in the *Perspective* viewport, choose *Bevel Polygon* from the *Quad Menus* and click-drag to extrude these around 10 units. Release and move the mouse to bevel the polygons down in size to a value of -5. (see fig 4.). Repeat the bevel/extrude process several times creating the shape of the arm, elbow joint, wrist and hand. You may need to scale sections of the arm down to make it thinner, such as at the hand, as bevelling increases polygon size in two axes. Select a polygon on the top of the hand to bevel/extrude the thumb.

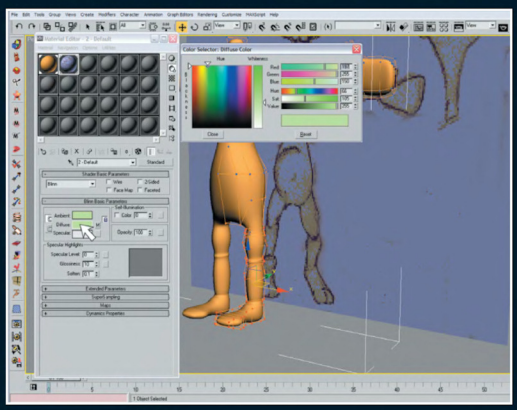
Rotate the *Perspective* viewport so you can see the underside of the torso as we will now extrude out the legs. Select the central vertex on the far right at the bottom of the torso. Right click it to choose *Chamfer Vertex* from the *Quad Menus* and chamfer it to a value of around 35, producing two new polygons that will be extruded to make the leg.

Turn off the *Mesh Smooth* mod with the light bulb icon, to make selection of these two new polygons easier, and then right click choosing *Bevel Polygon* from the *Quad Menus*. Create the legs using *Extrude/Bevel* adding more sections near joints. At various points along the process you may need to hit the *Make Planar* button in the *Command Panel* to make extrusion of the selected polygons more predictable (see fig 5).

This concludes our modelling for this issue. Next time we'll create the head and face, do some texturing, add more detail to the mesh, and start creating the control skeleton of *Bones*. We'll also study several other techniques for creating various other objects.



ABOVE: TIFF Bitmap selection. Find some nice-looking textures for your creation.



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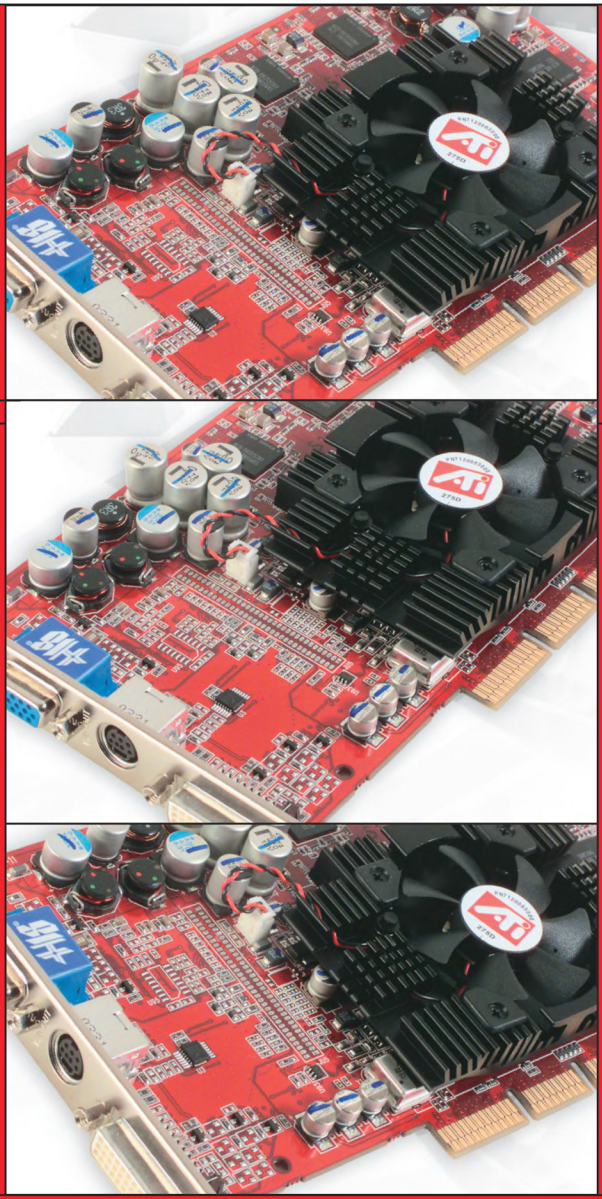

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Atomic 23 winner, Altech gear: R Mitchell, Toowoomba QLD.

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WITH COMPS

Mechwarrior Mercenaries

For those of you who believe in reincarnation, there can be little doubt that you couldn't do much better than to return in your next life as a 100-foot high Mechwarrior with nuclear missiles on your shoulders. *'No, I DO NOT want fries with that!'* you will boom, as you laser beam the Employee of the Month's eyes out of his sockets. Being a Mechwarrior has its advantages, mostly because everyone is afraid of you.

If you can't wait until you die and are reborn, you can experience the joys of Mechwarriorness thanks to Microsoft's new reality simulator: Mechwarrior Mercenaries. Depicting everyday life in the 31st century, this software features rich 3D graphics and a compelling storyline. We have 10 copies to give away to visionaries of robotic combat greatness.

Q: What were the last spoken words in '2001: A Space Odyssey'?

Albatron GeForce4 MX 440 AGP 8x

Albatron makes terrific video cards and motherboards, as well as having a very cute name. It's not everyday that one comes across a mad fusion of great feathery oceanic wingspans and famous Hollywood actor Jeff Bridges. No sir. So, in order to properly celebrate this miracle of screwing with the forces of nature in ways not even Sam Goldwyn would approve of, we told Albatron that we weren't returning the GeForce4 MX 440 AGP 8x that it had sent for review, and that we would instead be giving it away on this page. We were expecting Albatron to dispatch a squadron of robot seabirds to bash us, because that's what we'd do if someone tried to flog-off with our blue PCB, but Albatron instead agreed that it was a great idea. Crazy! Or maybe they're just nice. . .?

Q: What letter did the trees form in *It's a mad, mad, mad, mad world*?

Anyware Perspex case

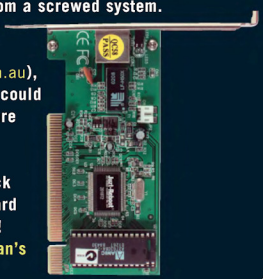
With a little careful thought, one could easily make a list of things that would be good in a 'see-through' version. A few examples could be: walls in Counter-Strike, clouds on a rainy day or Anna Kournikova's tracky daks. Somewhere, there are smarter people than us, and those smart people came up with an even funkier thing to make see-through: a PC case! Incredible.

Now you can defeat the purpose of spending a fortune on your hot box by staring at it, itself, instead of the monitor, all the while glowing in the marvellous glow of techlove. Who would want Anna when you could have this? This was reviewed in *Atomic 23*, and supplied by the good people at Anyware (www.anyware.com.au), the Perspex case is up for grabs.

Q: Who's wings were like shields of steel?

Juzt-Reboot WOL-NT

On *page 70* of *Atomic 23* you'll find a review of the Juzt-Reboot NT card. Do read it. Back already? Great. Great card eh? While the focus of the review was the preservation of network admin sanity that this wonder card imparts, Atomicans@home are equally susceptible to its data security charms. See, with one of these babies installed it's actually harder to try and screw your system than it is to recover from a screwed system. Really quite amazing. So amazing that we asked the distributor, ADO (www.ado.com.au), to chuck some our way so we could chuck some your way. There are four to win, each worth $149. Now, if you dare, you can challenge your friends to wreck your PC – and watch as the card probably stops them! HOF HOF!



Q: What were the Bionic Woman's strong bits?

Email entries to win@atomicmpc.com.au or post them to: *Atomic*, PO Box 275, Beaconsfield NSW 2014. Please send a separate entry for each competition. Please ensure the competition name is the subject of the email, or is displayed clearly on the front of the envelope. The closing date for entries is 15 January 2003. Winners will be announced in *Atomic 26*.

Atomic 23 winners: JNC SSF-164 MP3: Q. Which Racey songs were top 10 hits in Australia? A. 'Lay your love on me' – reached No. 1 in Australia. M. Rosa, Paralowie SA. Albatron Ti4200 Turbo: Q. Where does Albatron's Dr Pro live? A. Mauritius, Indian Ocean. A. Ashford, Innisfail QLD. L.I.S LCD panel: Q. What were the robots' names in *Silent Running*? A. The names of the robots are Huey, Dewey and Louie. D. Fan, Carlton NSW. No One Lives Forever 2: Q. How was Mata Hari executed and what happened to her body? A. She was killed by a French firing squad, and her unclaimed body was used for medical research at a French Medical School. Her head was apparently severed from the body and was placed in the Museum of Anatomy in Paris, but mysteriously vanished a couple of years ago. S. Freiberg, Capalaba QLD; G. Donnellon, Murrumba Downs QLD; B. Hunter, Kaitaia Northland New Zealand; K. Tang email; G. Gully, Keith S.A; J.Freeman, Hamlyn Heights VIC.

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Anna Kournikova, cont.

Let us share your thoughts, your feelings, your inner-self. Lay down the smack or bounce off the trampoline of exultation. Do it here. Most wonderful thoughts this month will be rewarded with the spanky Logitech MX 500 vundermouse.

POTM: Why *Star Trek* is better than *Star Wars*

www.atomicmpc.com.au/forum.asp?cat=ge&top=73384

I wrote this in response to Dark Lord's appalling thread claiming that *Star Wars* *choke* is better than *Star Trek*. . .

Somewhere aboard a Big White Plastic Spaceship. . .

Weak Chinned SS Lookalike #1: My Lord, despite our vastly superior technology, a bunch of midget muppets with clubs and spears continues to resist our invasion of the planet below.

Dearth Vaguer: (presumably looks angry, though we can't tell behind his plastic mask) *rasp* You fool! *rasp* You have failed! *rasp* Die!

Weak Chinned SS Lookalike #1 clutches throat, gasps, and falls to the ground dead. Dearth Vaguer turns to Weak Chinned SS Lookalike #2.

Dearth Vaguer: *rasp* You are now in charge. *rasp* Fire the SuperMegaScaryWeapon and blow up all the cute muppets! *rasp*

Weak Chinned SS Captain Lookalike #2: *trembles* But Lord. . . even though we have the technology to create SuperMegaScaryWeapons and Big White Plastic Spaceships, we haven't yet worked out how to turn them on and charge them up in anything less than an hour!

Dearth Vaguer: *rasp* You fool! *rasp* You too have failed!

Weak Chinned SS Captain Lookalike #2 clutches throat, gasps, and falls to ground dead. Dearth Vaguer turns to Weak Chinned SS Captain Lookalike #3.)

Dearth Vaguer: *rasp* You are now in charge! *rasp* Deploy the white plastic LegoMen to the surface and capture the Fairy Princess!

Weak chinned SS Captain Lookalike #3: *trembles* Yes, My Lord!

Dearth Vaguer: *rasp* And bring me my asthma inhaler! *rasp*

Meanwhile, on the surface of the planet. . . a Smaller White Plastic Spaceship lands, and opens its doors. Hundreds of White Plastic LegoMen troops run out. Watching from the nearby bushes are Earnest Boy Scout on Road to Manhood, Reluctant AntiHero, Improbable Princess, Camp Comic Relief Robot and Mystical Muppet.

Earnest Boy Scout: Let's try to rush them!

Mystical Muppet: Try? There is no try.

Reluctant AntiHero: Yeah, right. There is no try, only 'trite'. Right Princess?

Improbable Princess: Don't do it! It's suicide! If we're going to get through this war, we're going to need all the New Age aphorisms and veiled sexual tension we can get!

Earnest Boy Scout: I know. . . let's get all the midget muppets with clubs and spears to attack the laser wielding Plastic Legomen, while we sneak aboard the Small White Plastic Spaceship!

Earnest Boy Scout calls to Midget Muppets – 'Attack!!!'

The Midget Muppets rush the Plastic LegoMen. As if guided by superior New Age philosophy, they mow down the Plastic LegoMen while avoiding the hail of lasers and bombs being rained upon them by their vastly superior opponents. Very occasionally, we see a Midget Muppet stub his toe, trip over a Plastic LegoMan corpse, or stumble. Meanwhile, Plastic LegoMen are being dismembered in a horrific flurry of white plastic bodyparts. The heroic foursome walk through the melee untouched and sneak onto the Small White Plastic Spaceship.

Earnest Boy Scout: Well done! Now who knows how to fly this ship?

Mystical Muppet: Knows? There is no knows.

Reluctant AntiHero: Yeah, right. Stick this up your nose – there must be four hundred buttons on this flight console!

Improbable Princess: Use the farce, Boy Scout!

Earnest Boy Scout closes his eyes, and hits a button at random. The door closes, and the Small White Plastic Spaceship executes a perfect takeoff, heading back to the Large White Plastic Spaceship.

Meanwhile, back aboard the Big White Plastic Spaceship. . .

Dearth Vaguer: I sense them getting closer. Is there anything on the scanner?

Weak Chinned SS Captain Lookalike #2: Nothing, Lord. Just that Small White Plastic Spaceship returning to us. They must have a broken radio system as they not answering our hails.

Dearth Vaguer: Damn those scientists! When will they invent a radio system that works; a SuperMegaScaryWeapon that charges up immediately; and Plastic LegoMen who can aim? In any case, let the ship dock, and don't bother sending anyone to meet it. I can sense threats a galaxy away, and I'm confident there's nothing to be concerned about aboard that ship.

Meanwhile, the Small White Plastic Spaceship has docked inside the Big White Plastic Spaceship. Earnest Boy Scout on Road to Manhood, Reluctant AntiHero, Improbable Princess, Camp Comic Relief Robot and Mystical Muppet sneak into the curiously deserted corridor outside. . .

Earnest Boy Scout: You all stay here, even though there are five of us, I'm going to take on Dearth Vaguer and his Elite White Plastic Guards single-handedly.

Mystical Muppet: Take? There is no take.

Reluctant AntiHero: I can't. . . anymore of your #@%&! meaningless mysticisms!

Improbable Princess: Good idea, Boy Scout. When you get back, I'll suddenly ask Reluctant AntiHero to kiss me.

Camp Comic Relief Robot: Souvenir a few Elite White Plastic LegoMen bodyparts for me, won't you? Preferably firm white plastic buttocks.

Virtuoso

The POTM selection process goes a little something like this – every Atomic staff member keeps a record of their favourite posts throughout the month. At selection time, we all compare notes and decide on the winning POTM. Then, someone asks 'but, didn't Virtuoso win last month?' and we all agree that must surely have been the case, so we move to #2 on the list and send them a mouse.

As it turns out, Virtuoso has never actually picked up the golden POTM. WTF? You may ask. Every post Virtuoso lays is golden, which is something we should be especially grateful for, as Big V has posted more than anyone else, by a rather huge margin.

We hope you'll stay and play with us forever Virtuoso.

Earning an El Spunko Logitech MX 500 mouse is V's post attempting to settle the Star Wars versus Star Trek debate once and for all.

Is it any surprise that this served only to flame the fire? Perhaps that was the intention. . .

Punch Factor

Online multiplayer is the one gaming paradigm where unsportsmanlike behaviour is truly at home. And it's all because of the 'Punch Factor'. In the physical world, there are lines over which gamers don't step, because the real world of hurt feelings and bashed faces is always nearby. Bad sportsmanship over a pool table might well see you getting acquainted with the blunt end of a cue, but the same behaviour on a Counter-Strike server will never get what it deserves, because the Punch Factor isn't in the equation. So to those who like to insult and cheat and whinge online, try to imagine that your fellow gamers can reach out and smack you. Maybe then you'll be able to play nice.

Toby McLaughlin

Puzzle

HI! I have a big problem. . . hope u people can help me solve!!!! I have a DSL connection at home. . . but it is slow. . . and cable is good. . . but not fast enough. . . I heard from my brother that at his university they use a wireless connection. . . that uses satellite. And it is fast. . . 11Mb/s. . . something to do with microwave technology. It communicates with the satellite directly and uses microwave technology. And he says it is fast. He says it is not broadband. This makes me think? I thought the fastest connection is broadband. . . and cable?? Excluding LAN and the all the wireless networks. . . Is there anyway I can get a super fast connection that will offer me 10Mb/s and above??? And it must not be a type of router, something that offer fast gaming, fast surfing speed and download speed! And what is this microwave technology?

I am puzzle!

Richson Tung

Dear puzzle,

Microwave and Satellite are two different broadband technologies. Satellite originally used a modem line for upstream data traffic, but recently two-way satellite services have been introduced. However, the maximum bandwidth available is still limited to 512Kb on Telstra's commercial service. Microwave can deliver around 10Mb/s but it is restricted to line-of-sight operations and is mainly used for universities to connect areas of the campus together with a private broadband link.

G-Cards

First of all, thank you for the great and rich contents of your magazine. Being one of the earliest subscribers of your magazine, you never failed to impress me from the very first issue. Please do keep up with the good work, and why, I might end up subscribing for life provided you don't lower yourself to the level of PC magazines for commoners.

Having said that, I am quite concerned about the lack of coverage in some topics. For example, you have not benchmarked the motherboards for quite some months now and never touched up on the speed of the poor hard disks.

Also, it is important to point out that while the speed is obviously the most important aspect we PC enthusiasts consider, the issue of reliability and compatibility is equally important for us PC buyers. There is no point of buying the fastest CPU, motherboard, G-Cards etc. only to find that they always disagree with one another, or that they always get sick. Please, if you can have some constant feedback on these topics, even one line or two in a regular review, it is really helpful for us to go shopping.

H. Guo

Dear H, we've done a fair bit of coverage on Serial ATA lately, and that should help with your shopping needs for now.

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Aria Giovanni

Dear Aria, your considerate offer is gratefully accepted.

It is kindness like this that really drives home the real warmth Christmas can bring. With examples like Aria's gift of giving we at Atomic *know that if we all pull together we can have a white Christmas.*

Key spooge

Dear *Atomic*,

Well to start: you guys rock, you're the cheapest, most informative, most awesomes mag (if that's a word) around. Anyways, my question is music and PC related.

I have attempted to fix my girlfriend's dying keyboard of five years. I know a little about the electronic side and could fix a loose wire.

It seemed to drop out and only play the keys occasionally. I opened it up to find that the main processor on the board that seems to handles the tones was leaking a brownish fluid, it wasn't wet, but in places was a little sticky.

It was the only place that had the sticky fluid.

I know that replacement for the chip would be either too expensive or impossible to find, so I wanted to know what exactly a chip was made of, and maybe what could have caused the leak of this. . .stuff.

Just after some more knowledge and I know you guys can help.

Ice06

Dear Ice06, it sounds like you might have a battery leakage. Stay well clear of it because that stuff is highly toxic and can screw with you decades after exposure. The other possibility makes us feel uncomfortable when we think about it. We can only suggest that it's time to lash out some bucks and grab a new keyboard dude.

LOTM: A right munter

Greetings from the 'blue nowhere'. I love the magazine – no frills – no rubbish – no vendor-charged marketoid rhetoric.

I was reading the latest edition and came across something unusual in your column – the word 'munty'. I am curious: typo, netspeak or newly constructed adjective?

Clinton Smith

Dear Clinton, many years ago the Editor of this magazine was shopping for a vacuum cleaner, wanting something with the as-yet unborn spirit of Atomic inherent within the product. Thus, a vacuum cleaner of unnecessarily abundant power was requested. The sales assistant, who, whether relevant or not, possessed the accent of a New Zealander, led the customer to a larger than average vacuum cleaner, stating: '2,000 watts! She's a right munter!'. Thus, a thing which is of great power could be considered a 'munter', 'munty' or, in the case of a thing which has been smitted by a munter, is considered to be 'munted'.

Flight of fancy

Last month, aviation observers were blown away by a new stealth fighter jet, made by aerospace manufacturer Boeing. Called the *Bird of Prey*, the new jet is the ultimate in cutting-edge technology, and looks sexier than Cindy Crawford in suspenders.

It's not just its sci-fi look that is giving tech heads sweaty palms. Apparently the aircraft can do the impossible: become invisible to all forms of detection, including the naked eye. Sources say the panels on the aircraft can alter their colour and luminosity automatically, rendering it virtually undetectable in full sunlight.

My first though at reading this was 'Holy crap. I can't believe there are so many aeronautical engineers that are *Star Trek* fans.' *Bird of Prey*? Oh come on. . .

Then I turned my mind to the new chameleon technology. 'Virtually undetectable'? What does that mean exactly? If it's anything like the 'virtual girlfriend' program I once previewed, there will be a lot of frustrated fighter pilots out there ('Push "t" for full thrust now. Oooh that feels so good. . .').

But if the technology is actually capable of hiding the aircraft, it would change the face of warfare. Strike fighters could carry out broad daylight runs, impervious to all anti-aircraft weapons and CNN cameramen. Sure, the pilots might lose their planes every so often ('I knew I parked it around here somewhere!') but the savings on paint and camouflage netting would help offset that.

And when this technology filters down into everyday use, we could have clothing that makes us undetectable until we strip. How cool would that be? Transparent shoes so we can see what we're treading in, and invisible overcoats for. . . umm. . .show and tell activities. The ultimate in exhibitionist apparel.

Eventually, I got to thinking about the computers that control the *Bird of Prey*. There would have to be some serious processors on board, fast enough to record ground patters and change the jet's skin panels. Maybe a run-of-the-mill Pentium would suffice if you were scooting over the desert; but fly over a hedge maze and you're in supercomputer territory.

It really makes me wonder where they get these processors. Okay, before you take out your ink quills and parchment and send me a letter saying 'the US military programme', just think about it. No government programme has unlimited funds, and most of these funds are eaten up by practical things, like aerodynamic testing and cafeterias with multiple water fountains. The best way to save money is to buy from the most efficient supplier – in this case, the mass producers like Intel.

You could probably open up a *Bird of Prey* and find Intel stamped everywhere. Which leads to the obvious question: why aren't *we* using these chips? If Intel can make them for Boeing, why can't it sell them at Charlie's Computer Barn? Sure, they may cost twelve thousand dollars each, but there must be wealthy readers that spend that much on hair gel each week alone (Me? Jealous? Nah. . .).

Anyhoo, my point is that the consumer market determines the end product – not the technology. I'm sure there are chips out there that are so fast they'd let you play Doom 3 at 120fps on a drive-in movie screen. But it comes down to what the majority of users want – not the elite. It's called supply and demand and, unfortunately, the only people getting the Uber processors are such luminaries as the US military and George Lucas.

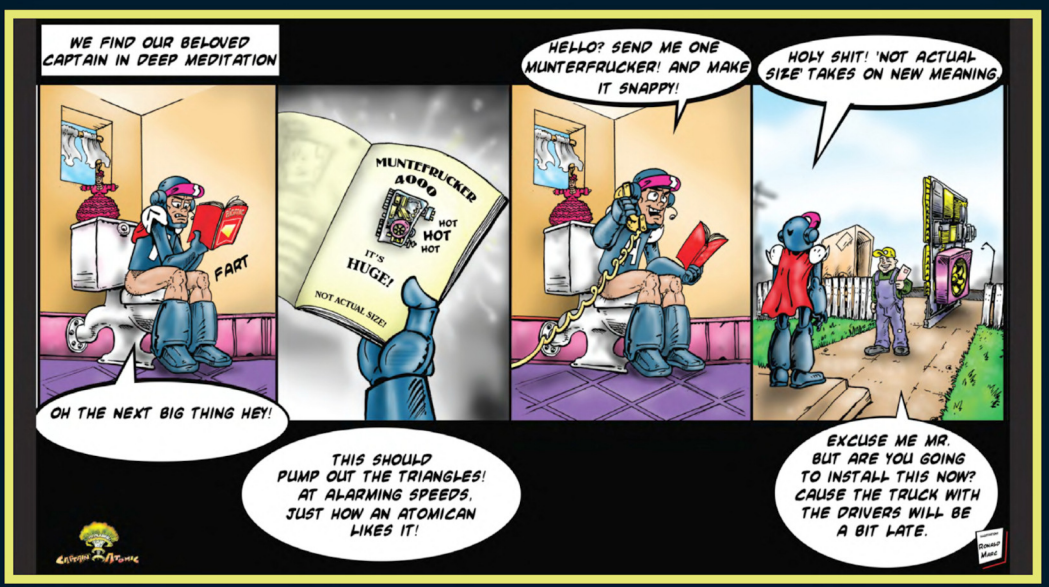
The good news is that the bugs will be ironed out by the time we get our own *Bird of Prey* processors. Boeing would've gone through its share of aircraft and test pilots, and Intel would've taken over just as many developing Asian economies in the development process. The new chips will all be named after *Star Trek* characters, will be shaped like hi-tech weapons or sex toys, and will self destruct violently if you lose your registry key.

Of course, most of the stuff I've mentioned here is pure speculation, pieced together from watching the *X-Files* and snippets of the ABC news. Who knows – maybe there will be a technology backlash next year. Who knows?

Until then, I intend on making the most of current technology, wringing out as much as my aging PCI bus can handle.

Now, where's that Virtual Girlfriend. . .

John Simpson



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106dB SNR

8 TIMES BETTER SOUND QUALITY
Astounding 106db SNR audio quality compared to regular 16-bit audio card at 90db SNR.

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THE ONLY THX® CERTIFIED SOUND CARD
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Get True Dolby Digital EX support for rear movie centre channel for intensified 6.1 movie realism.

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Capture all the subtle details of the original recording with pure audio recording path.

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THE 1ST MEDIA PLAYER WITH DVD-AUDIO PLAYBACK
Playback DVD-Audio discs at 24-bit/ 192 kHz in stereo or 24-bit/96kHz in 5.1 mode.

6.1

ULTRA IMMERSIVE 6.1 SURROUND SOUND EXPERIENCE
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POWER UP WITH CREATIVE'S EAX ADVANCE HD™
Gives you the most realistic music playback and immersive gameplay.

SB1394

SUPER-FAST SB1394 PORT
Transfer audio/ video content at blazing speed of up to 400Mbps.

Sound Blaster Audigy 2 Platinum

Superior 24-bit ADVANCED HD audio technology for your music, games and movies.
Also comes with convenient front panel connectivity for expanded options.

Sound Blaster Audigy 2

Get the best of digital music, gaming and movie experiences with the superior 24-bit ADVANCED HD audio technology!

Recommended Companion
Creative Inspire 6.1 6600

CREATIVE INSPIRE

Hook up Creative Inspire 6.1 6600 to Sound Blaster Audigy 2 and experience spetacular 6.1 desktop entertainment with Dolby® Digital EX encoded movies, and incredible EAX® and Microsoft® DirectSound® 3D effects in games.

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Creative Labs Pty Ltd. Locked Bag 5000 Banksmeadow NSW 2019
Tel (02) 9666 6100 Fax (02) 9666 6900 www.australia.creative.com